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Editorial Notes

USUALLY we devote these opening pages to comments upon current events of general interest rather than to the record of actual occurrences. There are times, however, 'between seasons', when the current is a little sluggish—when the work of one season is over and that of the next not ready for consideration. There is no lack of activity in the archaeological world this summer, rather the opposite; but the work of excavation does not as a rule begin until June or July, and we go to press before even the principal achievements are known and revealed. We propose therefore to vary the theme by describing an aeroplane tour we took last June, for the purpose of looking at some promising sites at a time of year when they might be expected to show up well. We apologize for the slight but inevitable intrusion of the personal element imposed by the character of the narrative.

The tour originated in a suggestion by Captain H. J. Andrews and was carried out in his Blackburn Blue Bird, a two-seater aeroplane which proved admirably adapted for the purpose. Captain Andrews flew it, and it says much for the reliability of modern air-craft that from start to finish there was not the slightest hint of engine-trouble, or any other kind of hitch. The fact that we could sit side by side and compare notes verbally was also a distinct advantage.

We started from Heston aerodrome (London) on Friday afternoon, 20 June. The first night we slept at Brough on Humber. Next day we flew along Hadrian's Wall to Carlisle and slept at Longtown. The day after we followed the western route (Roman and modern) to Glasgow, did some exploration of Roman sites in Perthshire and returned, by the Roman eastern route, to York and so on to Brough again. On Monday we returned thence to London. About 70 ancient sites were looked at, many of them being new discoveries of the pilot's or the observer's, and we followed Roman roads whenever possible in preference to modern ones or railways. The chances of discovering new sites were thus increased, and the actual number of sites seen, both new and old, was naturally greater than it would otherwise have been.

The first discovery was made near Gravenhurst, in Bedfordshire, not far south of Cardington where the airship was moored. Captain Andrews observed a very plain ' crop-mark ' in a cornfield, consisting of a small square within a circle. Curiously enough this very object had been discovered on the ground on 8 June by a reader of ANTIQUITY, and again, on 17 June, by an officer of the Royal Air Force. The plan is not unlike that of the Roman signal-stations on the Yorkshire coast ; but no such signal-stations have yet been reported inland. In plan the coastal signal stations consist of a circle surrounding a square with rounded corners, but the Gravenhurst square has most distinctly angular corners. Its age and purpose must remain doubtful for the present.

Thence we flew northwards to our main objective, the Roman town of Durobrivae. (The site is in Huntingdonshire, in the extreme northwest corner of the county ; the modern village of Castor lies in Northamptonshire just across the Nene). Here we made the most remarkable discovery of the tour. We saw the plan of the Roman town, with its streets and some of its houses plainly outlined in the corn. It was what we hoped for, but more than we had dared to expect. We knew that the area of the town was planted with corn ; but so is Verulam, and we had flown over Verulam about half an hour earlier and seen nothing. Here at Castor we saw a plan as clear as that similarly revealed in 1928 at Caistor, Norfolk. It was all the more valuable because it was quite a different plan. But there was even more than

this. Just north across the rivulet, well outside the plainly visible ramparts, was outlined in the corn the plan of a fine Roman camp, complete with rounded corners and, on the north side, no less than four parallel ditches. It reminded one of the fort at Ardoch in Perthshire which we visited two days later. Such a camp must surely belong to the 1st century, the period of the Roman conquest of England. Its survival through the Roman period—when the whole site was covered with pottery kilns—and through the vicissitudes of subsequent history, to be revealed thus as shadow in the corn is surely one of the most romantic episodes of modern discovery. It is also a new historical fact of prime importance to students.

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On Saturday we flew from the Humber past York to those remarkable earthen circles, five in all, on Hutton Moor and near Thornbrough. They have frequently been described (see British Association Excursions Handbook, Leeds meeting, 1927), and it has been suggested that they may have contained ' Woodhenges ', but although some of them were under corn, we could see no signs of post- or stone-holes. We drew a blank at the Devil's Arrows, nor did the adjacent Roman town of Aldborough, the tribal town of the Brigantes in Roman times, reveal much. We saw one or two possible long barrows, and a few minor sites, and after filling up at Cramlington flew along the Roman wall to Carlisle.

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To profit most by the overhead view it is necessary to know the local topography as only the groundsman can learn it—on foot. Such knowledge we had not got ; so that, although the flight was a valuable prelude to the Pilgrimage we were shortly to make, under expert guidance (see pp. 358–61), we fear that we missed much through ignorance. Captain Andrews spotted a new four-sided enclosure on Matfen Moor, and we both had a good look at the remarkable cultivation-banks near Housesteads and Great Chesters. Air-photographs, however, are needed fully to elucidate them, and we shall await with great expectations those which are being taken of the whole length of the Roman Wall by the Royal Air Force.

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We landed in a field near Longtown to fill up, and then set out for Scotland. We flew round Burnswark in Dumfriesshire, that remarkable

flat-topped hill which the Romans besieged. We thought we saw traces of a circumvallation, but a subsequent visit on foot proved that they were quite illusory, and that in such cases (as contrasted with crop-sites) ground-work is essential to check air-observation. (The last word on the subject has been said by Mr R. G. Collingwood in the Trans. of the Dumfriesshire and Galloway N.H. and A.Soc., 1926.

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After reaching Lockerbie it began to rain and got very hazy ; so, as we had to cross some high ground before reaching Renfrew and we wanted to have a good view, we returned to our field at Longtown and slept that night in the town. Next morning we followed the Roman road up Annandale across the pass by the Devil's Beef-tub into Clydesdale. It was plainly visible throughout, and beyond the camp at Clyde Burn we got several hints as to its further course which await an opportunity for investigation on the ground.

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We proceeded by Renfrew into Perthshire, flying over Ardoch and along the Gask ridge. The Roman fort at Grassy Walls near Perth (described in 1771 by General Roy, but correctly placed on the map in 1917 by Mr Graham Callander) was only partially visible, but the western side coincided exactly with Mr Callander's published plan; air-photographs are promised. We had a look at Inchtuthill and Cleaven Dyke to the northeast of it—an earthen rampart between two ditches and a Roman work surely—but could see no signs of its continuation in either direction.

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We were equally unsuccessful in seeing anything fresh at Carpow and Crichton Hill, where Roman forts must have existed ; but this proves nothing. The fort at Newstead near Melrose was also invisible, though it has been excavated with the greatest care and thoroughness by Mr James Curle. Cappuck and Channelkirk were also unremunerative, though both forts are proven beyond any shadow of doubt. Pennymuir and Makendon were visible but needed a low light to do justice to their intricacies. Under such favourable conditions they would give splendid results ; and one hopes that air-photographs of them may one day be secured. The native camp on Woden Law was a fine sight, and it too should be photographed, together with the Roman road winding over its shoulder.

Continuing southwards we flew several times round the magnificent oppidum of the Brigantes at Stanwick, which we hope to explore thoroughly on foot later on. On Monday morning we visited a site near Hibaldstow, where over an area of 100 acres Roman pottery and building-remains are abundant. It has been located recently by Mr C. W. Phillips, following up certain earlier clues ; and it seems that there was a walled Roman town there. We saw what might be the outline of two lengths of the Wall, but the site as a whole was disappointing. Later we flew along King Lud's entrenchments, an earthwork of the Grim's ditch type, and then southwards along Sewestern Lane, whose junction with Ermine Street proved to consist of a straight section of causeway, clearly of Roman age. After another look at Castor, which increased our admiration, we flew slowly in the teeth of a 40-mile wind to Irchester, another Roman town, only to find that there was nothing at all to be seen of the plan. We saw some barrow-circles between Goldington and Howbury, near Bedford ; we satisfied ourselves that from the air no more could be seen of the eastern end of Grim's ditch near Berkhampsted, and finally we had a last stroke of luck in rediscovering Stukeley's so-called Roman camp on Greenfield Common, just south of Staines reservoir.

There is no room for a summary, but the moral is obvious. The young archaeologist who wants to make discoveries must join a flying-club and learn to fly. Not until then will the harvest be reaped. Our tour sufficed to show that England is still, for the archaeological aviator, an almost unexplored country.

Subsequently we had the pleasure of taking part in the Pilgrimage of four days along the Roman Wall. (An account by Sir George Macdonald is printed on pp. 358–61). The weather was perfect, like the organization. To do a leisurely tour of this kind in good company, where it was possible to ' talk shop ' continuously from morn till far on into the night, was a rare delight. The Wall itself is the key to the military history of Roman Britain. During the present century intensive excavation of the most rigidly scientific kind has solved many of the major problems. The solution of the remainder is in competent hands and is proceeding apace. Here ' digging for knowledge ' is the normal incentive which controls all excavation. So long as there remain gaps in our knowledge that can be filled by these methods of

enquiry, the study of Roman Britain will retain that virility which it most certainly possesses at the present moment. One kept wishing that Professor Haverfield, who planted so many of the seeds now bearing fruit, had lived to take part in the Pilgrimage.

That at such a time the Wall should be threatened with virtual destruction by a company promoter is almost inconceivable. But that the danger is still a real one is clear from Sir George Macdonald's remarks on p. 361. When one who has held a high position in the service of the State speaks out so plainly, it is time for every educated person to rally to his support. We ask our readers to do so in the proper way, by writing to their Member and by adopting all constitutional means of opposition. The issue is a clear-cut one, of private greed versus national honour. British archaeologists must not allow this supreme act of vandalism to be perpetrated under any conditions whatsoever.

In the present number we insert an appeal, which we cordially support, on behalf of the campaigns Miss Caton-Thompson is preparing in the Fayyum and the Libyan oases. Miss Caton-Thompson needs no introduction to the readers of her article on Zimbabwe (ANTIQUITY, December 1929) and her earlier one on prehistoric remains in the Fayyum (September 1927).

We hope our readers will bear with us if we also make a special appeal for funds to support the Colchester excavations described on pp. 362–4. These are concerned not with the Roman town but with the earlier native British capital of Cunobelin. The work is necessitated by the construction of a by-pass road, and, like Caerleon, is of an S.O.S. character. There has, indeed, been a cry of 'all hands to the spades' this summer; and the work is being directed by Mr J. P. Bushe-Fox, Inspector of Ancient Monuments, H.M. Office of Works. The important address, however, is that of THE COLCHESTER EXCAVATION COMMITTEE, Barclays Bank, Colchester, and the time to use it is NOW! Work will of necessity be carried on continuously.

The results already to hand show, as was only to be expected, that this is one of the great sites of the kingdom.

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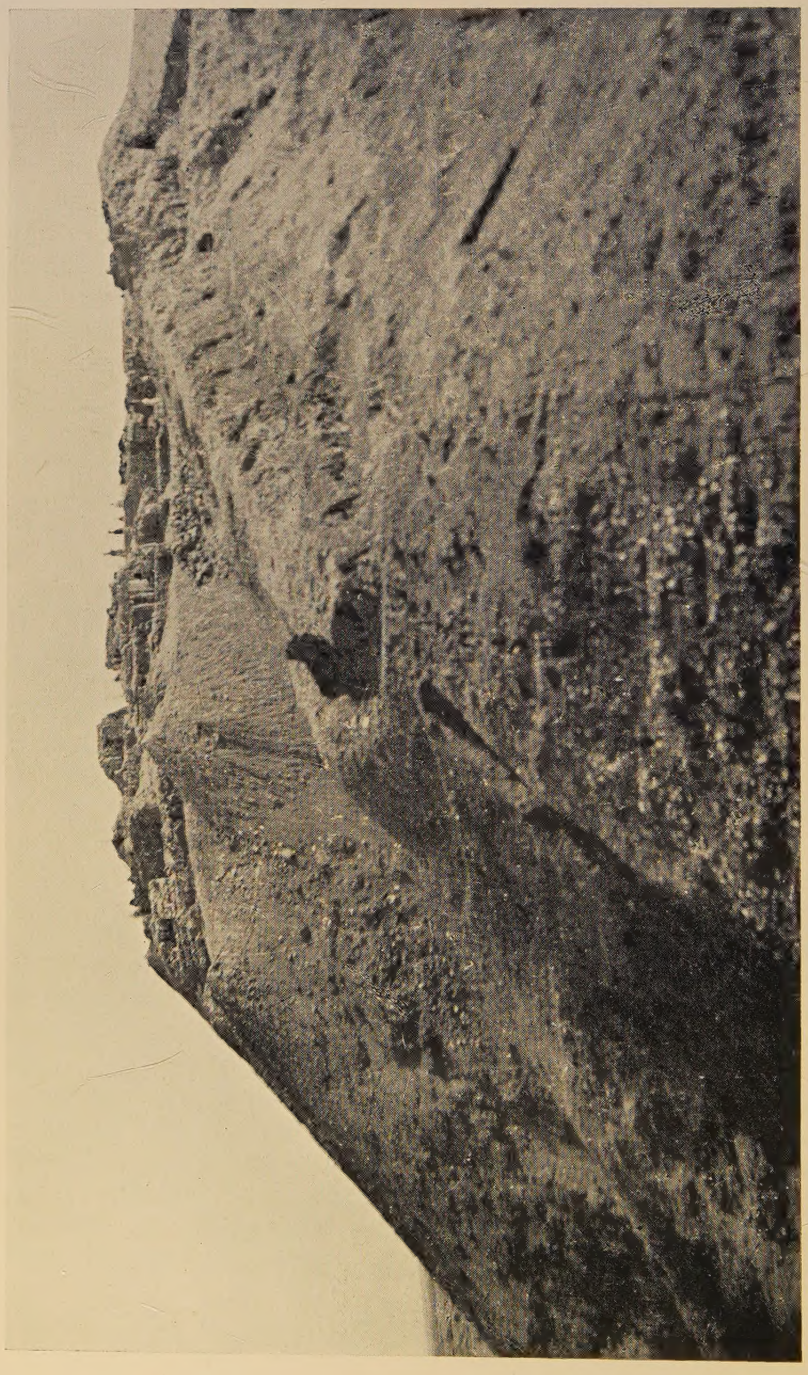
PLATE I



FOUNDATIONS OF THE ROMAN FORT OF VESPASIAN AT BETH-PELET

facing p. 279

The Linking of Egypt and Palestine

by Sir Flinders Petrie

IN the last four years, excavation has been going on in an untouched region, the desert border of Palestine, within a walk of the Egyptian frontier. All the district beyond Gaza was formerly raided so often from the south that it was unsafe ; now we can live eighteen miles out in the wilderness, surrounded by Arabs, without any defences, and never have a single dispute or trouble. Such is the result of the Occupation. Lawrence and Woolley, with surveyors, made a map of the region down to Kadesh Barnea and, on that map, half of the names survive which are listed in Joshua as the ' uttermost cities of Judah '.

The purpose of fixing the work of the British School of Egyptian Archaeology in this area was to gather the history of the Egyptian frontier and, by means of objects dated from Egypt, to settle the history of the products of Palestine. This has been done even more than we hoped.

Two sites have, so far, been searched. Gerar (Tell Jemmeh) lies nine miles south of Gaza, and here towns were piled one on the other, to a depth of thirty feet, from 1500 to 460 B.C. Beth-pelet (Tell Fara) lies eighteen miles south of Gaza, and was occupied from the Hyksos down to the Roman period, 2000 years and more ; it was also a great prehistoric centre. Full plans have been made, and published, of all the buildings opened in each town, and of the contents of each of the large tombs in the wilderness below.

It will perhaps be more intelligible to describe the results from both of these sites together, ranging from the well known time back into the dim unknown. At Beth-pelet the hill was crowned with the foundations of the Roman fort of Vespasian, dated by three groups of coins of Nero just before the Jewish war. The fort was square, 50 ft. by 66 ft., with various out-buildings on the top of the hill (pl. 1). This shows the steep slope on the north and west sides, at the angle of rest, down into the valley some 150 feet below. The greatest work of this time was an immense revetment along the stream, to prevent floods from undermining the hill. It was of sandstone blocks in hard lime cement, 300 ft. long, 30 ft. thick, and over 15 ft. high, and was dated by scraps of pottery imbedded in the cement.

Before that, the Persians had built at Gerar great conical granaries like those represented on Assyrian sculptures. This was the base of supplies for the army attacking Egypt, store enough for 70,000 men for two months. The latest invasion in that century was in 455 B.C.; the granaries must have been built by 457, while a fine Attic lekythos beneath a granary could not be before 460—a close dating.

Earlier than that, Psammetichus I had built a square fort at Gerar, 150 ft. by 115 ft., like his forts at Naukratis and Daphnae. A large number of Syrian fibulae of about this period were found; they differ from the European by having the pin made separately, with a stub end behind the coiled spring, to fit into a hole in the body. They are all of knee form, and the earliest, about 1200 B.C., has deeply chased bands of ornament; the latest type, about 500 B.C., has a curved bow, and no spring but a pin swivelling on a rivet.

The Assyrian invaders left a fine lazuli cylinder, engraved with the dugong seal, representing the god Ea; we also found a rubbish pit full of broken Assyrian pottery, the table service of the governor.

During the Jewish age Gerar was rebuilt, probably by Amaziah, in fairly regular lines. At Beth-pelet a tomb of a governor had in it a silver dipper and a silver bowl (plate II). The workmanship has eastern affinity, the lotus engraving is in Assyrian style, the bulls' heads at the handle are like Persian work; the handle itself, in the form of a swimming girl, is Egyptian in motive, yet the style of the face and hair are probably Syrian. The gadrooned silver bowl is Assyrian or Persian in taste, so the whole influence was from the Elamite-Assyrian side. In the same tomb were the bronze fittings of a couch, complete. All its corners were formed of three tubes cast in one, to take poles of hard wood for legs and sides; other banded rings fitted on the legs, and were linked by iron ties from leg to leg. It seems evident that such was the construction of the tables and seats represented in Assyrian sculptures. All this accords with the strong influence of Assyria when Ahaz visited Damascus, and remodelled the Temple furniture in Jerusalem.

The great figure before this was Shishak. He has been belittled by critics; Cheyne was mad enough to say that his name was a corruption of Cushim. Now we find that he was the greatest builder known in Palestine. His wall at Beth-pelet, 22 feet thick, is built of bricks of hard yellow clay, nearly double the usual size, and laid in clean sand foundations five or six courses deep. No such foundations are known otherwise. Tens of thousands of men must have been employed

PLATE II

SILVER BOWL FOUND IN THE TOMB OF A GOVERNOR, BETH-PELET

SILVER DIPPER FOUND IN THE TOMB OF A GOVERNOR, BETH-PELET

facing p. 280

AN EGYPTIAN SCENE, ENGRAVED BY A SYRIAN ARTIST ON A COLOUR-BOX FOUND AT BETH-PELET

in brick-making and building. This was not only in the south, but at Megiddo, near Haifa, he left a great triumphal stele. Far from the accounts of him being exaggerated, he was a much more important ruler than has been described in the book of Kings.

The period of Solomon was the richest in Palestine, when even a remote place had much better store of fine stone and gold jewellery than the Egyptians or Babylonians at that time. This was due to getting astride of both the oriental trade routes, the Euphrates and Red Sea, and the king actively trading between Egypt and the north. The political result of David's trust in his Bedawy guard of Pelethites, drawn from the frontier fortress Beth-pelet, was far reaching ; it embittered the Hebrews and led to the revolt of the ten tribes.

The growth of iron working has been fixed not only by single tools, but by the position of furnaces, at Gerar. There was a little work as early as 1350 B.C. ; by 1175, the metal was cheap, hoes and picks of some pounds' weight being made, and a large furnace in use. Swords were made and tempered in a long pottery bed heated by the gases from a furnace at one end.

The Egyptian Residency at Beth-pelet, in about 1300 B.C., was 80 ft. square, well built, with fitted door-frames of wood, erected before the bricks or plaster. It was roofed with cedar beams, which blazed and fell in at the destruction, lying, burnt through, on the floors. The store of Syrian wine was smashed, the sealings lay about ; it appears, by the quantity of the jars, that the place was in occupation, and taken by storm. The governor's bedroom and bathroom were found, and in a room, near by, lay the burnt remains of a box which contained stocks of colour. On the lid had been a band of ivory veneer, with an Egyptian scene, but engraved by a Syrian artist (partly shown in plate III). At each end of the scene was half of a palm tree, non-Egyptian in style. The governor, seated in his folding chair, on a leopard skin, is dressed in the style of 1300 B.C. Behind him is a pert Syrian boy, with a fringed tippet on his shoulders, waiting with folded hands. A maid-servant stands before the governor, to pour the wine into his bowl ; behind her is a dancing girl, and further back another girl playing double pipes. Wine, women and song were his delights. The attendants are followed by two men with groups of birds hung from poles across the shoulders, and a man carrying a calf on his back. The further scenes, not shown here, represent the trapping of birds in the marshes, and two large Cretan bulls. The style of the whole is very vivid. The animated faces, quite un-Egyptian, the spring of the dancer and of the men, the

bending of the carrying-pole, the helpless look of the calf panting with its mouth hanging open—all this has more immediate living action than is usual in Egyptian work; the nearest comparison is the XVIIIth dynasty scene of the heated cook running with the dishes at Tell el Amarna (*T.A.* pl. v). Though we often see, in the tombs, examples of Syrian work brought into Egypt and valued there, none has come down to us till now. At last we find what vitality and spirit the Syrian could show, and we may begin to suspect that the new life at Amarna was all due to Syrian artists.

While the Egyptian made tombs in the hill-side from 1300 to 1160 B.C. (dated by scarabs), the Philistines dug a row of five great square tombs from 1300 to 1130 B.C. in the plain below. These sepulchres each served a family for perhaps a century; the burials had with them local pottery painted with Cretan patterns, and daggers of Cypriote forms. One of these, at about 1230 B.C., was of steel, with a cast bronze handle; it had been snapped short, anciently, and was not of soft iron. These tombs evidently belonged to the Lords of the Philistines, and the use of metal was, even later than this, restricted to the Philistines, and withheld by them from the native tribes who were only allowed flintwork.

The age before the Egyptian conquest was one of the dimmest in the history. The Hyksos were known to have come down through Palestine into Egypt and held the Delta, with a suzerainty over the south. They were hated by the Egyptians, and scarcely any monuments have survived. Only scarabs are left, to commemorate 32 out of the 38 reigns assigned in the dynastic lists. The first remains discovered were the great square earthen camp at Tell el Yehudiyeh and a few tombs which I found in 1906, and a similar fort at Heliopolis in 1912. These forts are 1500 ft. square, containing about 36 acres. The bank stood 45 ft. high, with an outer slope of about 40°, faced with smooth stucco. The only access was by a sloping gangway, rising over the bank. Such forts are known in North Syria, and are accepted now as descending from the type used by the Turkomans. The camp at Yehudiyeh was later strengthened by a great stone wall round the foot of it, filling in the space between that and the slope, but this was only due to Egyptian influence.

At Beth-pelet we have recovered far more about the Hyksos than we knew before. Lying on the road from the hill country to Egypt, it was heavily fortified by the Hyksos who, true to the tribal reliance on steep glacis defence, deepened the ravines at each end, and dug a great fosse 80 ft. wide and 40 ft. deep, to cut it off from the plain.

The Hyksos cemetery contained three dozen tombs, mostly large double family vaults, with scarabs imitated from Egyptian work. The best of the scarabs are equal to those of the XIIth dynasty, and they are degraded by local copying till they reach the lowest stage before the expulsion of the Hyksos. There is, in this way, an approximately graded series through that dark period. In the latter part of the series is a scarab of a well-known treasurer, Ha-al, of whom dozens of scarabs are found in Egypt ; it is certainly not of Egyptian work, and it shows that the Hyksos rule was unified in Palestine and Egypt late in the period. These rulers were not, then, a horde of local chiefs but were kings of wide dominion.

The outcome of all this is of European importance, as it proves that the Hyksos dynasties, XV and XVI, were contemporary with the Egyptian XIII, XIV, XVII. The shortening of this age to 200 years by modern writers is due to an assumption that a document was dated in the shifting year (without a leap year) ; if dated in the fixed seasonal year, which the Egyptians used, there is no difficulty in accepting the historical records of the dynasties that remain to us. The Hyksos age and the XIIIth Egyptian dynasty began in 2375 B.C. and the XVIIIth dynasty in 1587 B.C. This will restore a chronology which was usually accepted till about a generation ago, and it results in placing the date of the Great Pyramid about 3750 B.C.

The civilization of the Hyksos seems to have been entirely acquired. They used the pottery types of Palestine when in that land, and of Egypt when in the Delta. They had bronze daggers of Cretan and of Cypriote forms. There is nothing that seems to belong to them, as a race. Being ' Shepherd Kings ', they naturally brought with them only the trappings of nomads. In Egypt they employed the Egyptians to continue building temples as before. The Turkish invasion is perhaps the nearest parallel.

Before the Hyksos, the Bronze Age is yet unknown, but I hope to fill this gap by working a great early site in the coming winter.

Next, we reach the early Copper Age, and the decay of neolithic work, as we have discovered a settlement with about eight feet depth of strata. Brick walling was used here, and granaries were built of beehive form, open at the top. Jars of pottery had ledge handles, well-known in the fourth prehistoric age of Egypt. Another settlement, purely neolithic, had stone mace-heads, also known in the fourth age, so it was not long before the use of copper. In that settlement the flint hoes were beautifully regular, straight-sided, ridge-backed, and often slightly

ground. Microlith flintwork was highly developed in a factory, with very regular cores of translucent smoky colour. Fire-stands of basalt were also made. Three earlier settlements show the rise of the microlithic industry in stages, and the use of it for making flint drills, with which are found the broken beads of carnelian and green felspar left from the working. With the earliest microlith work is associated some pottery well-known in Syria, the thick cups which have a loop handle from brim to base. These are dated by an imported example in Egypt of the middle of the third prehistoric age. Before all this, we found a settlement nine feet deep, containing flint hoes of a form which is barely out of the triangular mesolithic stage ; there was little or no pottery. Strange to say, the people of this age made many little clay figures of dogs. Now it is just in this region, some three thousand years later, that the dog tribe of Kenezites, with the name of Caleb, appear in alliance with Judah. It seems that they were aboriginals of the land.

Before all these half dozen neolithic stages, there was an immense palaeolithic population. This has left behind tens of thousands of flint implements which have been rolled in the stream bed. Some of these implements are of new forms, as skew-handled borers, and massive double-handed picks, but the majority follow the well-known types, and some are indistinguishable from Suffolk examples. There is a very long range, from unworn flint back to implements of which the faces are almost lost from abrasion.

The outline of the many interests of our Palestine work, from the time of Vespasian back to the Palaeolithic Age, will show what a promising new field this region is, and what large historical gains have been secured. As usual, all this work of discovery is very costly, and, this fiftieth year of my researches, a special fund is being raised, that it shall not be always hindered by lack of support. We require for the 400 workers more than a hundred pounds a week. As we have no grants, we depend on individual help from the public. The present ground is specially important for throwing light on the Biblical record, disentangling the successive ages of the past of man, and linking up the prehistoric times of Palestine and Egypt.

The End of the Maya Old Empire

by J. Leslie Mitchell

THE early nineteenth century witnessed a remarkable reversal of judgment on the American pre-Columbian cultures. Prescott's romantic histories and Lord Kingsborough's monumental *Mexican Antiquities* are inspirations of earlier and less sceptical eras. Such pleasing imaginings as that the Spaniards ' overthrew in Mexico a greater civilization than their own ' received scant support from the archaeologist who had displaced the antiquary, or from the critical historian who interpreted him. Dr Robertson[1] summed up the verdict of the new investigators :—' The inhabitants of the New World were in a state of society so extremely rude as to be unacquainted with those arts which are the first essays of human ingenuity in its advance towards improvement '. He characterized Cortes's ' emperors ' as ' headmen ', the gorgeous palaces of the Conquest as ' huts or mounds of rubble ', the Aztec Empire as a ' league of primitive tribes '. Research, both among the ruins of the Mexican Valley and in the histories of the more prosaic conquistadores, established a singular lack of anything on the pre-Columbian continents which could be described as other than a tawdry barbarism. Lord Macaulay, no Americanist, and therefore doubtless following Robertson, when reviewing Major Sir John Malcolm's *Life of Robert Clive* (1836) and comparing the achievements of Clive with those of Cortes, wrote: ' The victories of Cortes were gained over savages who had no letters, who were ignorant of the use of metal, who had not broken a single animal to labour, who wielded no better weapons than those which could be made out of sticks, flints, and fish-bones '.

Although it is now known that the manufacture and use of all metals except iron were fairly common among the native peoples of the two continents, the last hundred years of American archaeology has substantiated rather than modified such statements as Macaulay's. America at the time of the coming of the Europeans contained nothing

[1] *History of America*, re-issue 1820.

that might be classified as a true civilization. But that this had always been the case is by no means certain. The labours of innumerable investigators—explorers, archaeologists, ethnologists—begin to reveal that something which was either civilization, or rapidly approaching that indefinite cultural horizon, once flourished in the Central American forests.

A hundred years ago all Mexican and Central American ruins were still spoken of as ' Aztec ', in spite of the hauntings of the ghostly ' Toltecs '. The Maya of Yucatan were given little space by either Robertson or Prescott. They were presumed to have been an Aztec-influenced tribe at a slightly lower level of culture than the Mexicans. They had been mentioned by Cortes and Bernal Diaz, conquered by the two Montejos, and their history—the usual thin comminglings of fantastic legend and fable—written by two clerics, Lizana and Cogolludo. Remote on the lands of the Pacific coast the Quiché were also recognized as a tribe of Mayance blood, and—even from a modern point of view—justly assessed as ' barbarous '. But the land lying between the Pacific coast and Yucatan was almost without note in the histories.

This stretch of land, watered by the Grijalva, Usamacinta and Pedro joining in confluence to flow into Campeche Bay in the north-west, and by the Rios Hondo, Belize, Grande, Motagua and Chamelicon, flowing into the Gulf of Honduras in the southeast, is a swampy and densely forested region, partly comprising the Mexican state of Chiapas, partly British Honduras, and partly Guatemalan territory. Guatemala in the eighteen-forties was still a part of the old Central American Republic. Between the issue of Sir John Malcolm's book and Macaulay's review, and while Prescott was completing his *History of the Conquest of Mexico*, it was the scene of the explorations of John Lloyd Stephens, an American traveller and diplomat, who, in the intervals of seeking a stable government with which to negotiate some nebulous proposals of the President of the United States, visited eight ruined cities. He was accompanied by the English artist, Frederick Catherwood. The account of his explorations,[2] was principally of interest because of Catherwood's remarkable illustrations. These disclosed the fact that the strictures passed on the pre-Columbians had been altogether too severe, that something incompatible with barbarism, in point of architecture, sculpture, and the possession of an extraordinary hieroglyphic script, had once existed in the Usamacinta basin and

[2] *Incidents of Travel in Central America, Chiapas and Yucatan*, 1841.

GULF OF MEXICO
CHICHEN ITZA
NEW EMPIRE
YUCATAN
CAMPECHE BAY
COMALCALCO
RIO TABASCO
R. GRIJALVA
BAKHALAL
HONRADEZ
UAXACTUN
TIKAL
HOLMUL
NAKUM
NARANJO
PALENQUE
PIEDRAS-NEGRAS
R. USUMACINTA
JUPA
BENQUE VIEJO
OCOCINGO
MENCHE-(YAXCHILAN)
SIEBAL
IXKUN
GULF OF HONDURAS
OLD
EMPIRE
CHACULA
QUEN-SANTO
NEBAJ
QURIGUA
UTATLAN
COPAN
PACIFIC OCEAN

surrounding country. Its remains—identified, of course, as ' Aztec ' —had indeed been pointed out previously by Charnay and others, but Stephens and Catherwood were the first to make them generally known. In spite of innumerable differences, not so much in type as in technique, and a common script supplying the surest link, these remarkable cultural evidences were soon brought into connexion with the ruined cities of the historic Maya of Yucatan.

Among modern Americanists there is now something approaching unanimity in the belief that in the tract of land under consideration—a great inverted triangle in the heart of Central America, with a line drawn from Comalcalco to Tikal as base, and Copan in Honduras as apex—the first and greatest cultural climb of the pre-Columbians took place. What was at least the great semi-civilization of a settled and highly organized people blossomed into the rearing of scores of building-complexes which are supposed to have been the religious centres of long-vanished cities built otherwise of wood or adobe. From the middle of the eighth Maya cycle to the end of the tenth, a period of some 450 years, sculptural and architectural art in those 'complexes' passed rapidly from an archaic phase to a naturalistic, from a naturalistic to a formal, from a formal to a flamboyantly archaistic, and then ceased altogether.* Stated more cautiously, the datings in the curious calendar and script which accompanied those art manifestations ceased, a little after the close of the tenth cycle, to appear on the monuments of the region.

This, according to Professor Morley,[3] was not a ' sudden cessation of the monuments in the individual cities when each was at its cultural and aesthetic apogee, but a gradual abandonment of the region as a whole, covering a period of about a century '. The cities were presumably deserted, the great cultivated lands left to be reclaimed by the jungle. The survivors of the catastrophe or catastrophes which led to the abandonments apparently fled northeastwards into the barren peninsula of Yucatan and there carried on an attenuated culture until the arrival of the Europeans at least a thousand years later.

' The Maya ', says Dr Spinden[4] in his exhaustive survey of Old and New Empire art, ' produced one of the few really great and coherent

* The photographs illustrating this article have been specially selected by the author to bring out this process of growth, maturity and decline of Maya Old Empire art.—EDITOR.

[3] S. G. Morley, *The Inscriptions at Copan*, 1920.

[4] H. J. Spinden, *A Study of Maya Art*, 1913.

PLATE I

STELA AT COPAN, ARCHAIC PHASE

By permission of the Trustees of the British Museum

facing p. 288

PLATE II

STELA AT COPAN, FORMAL PHASE, *c.* A.D. 113
By permission of the Trustees of the British Museum

PLATE III

STELA AT COPAN, *c.* A.D. 253

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PLATE IV

SLAB FROM PALENQUE

By permission of the Trustees of the British Museum

expressions of beauty so far given to the world, and their influence in America was historically as important as was that of the Greeks in Europe '. The consequences of the overthrow of the first American essay at civilization in that territory variously known as the Old Empire and as Xibalba—the latter perhaps a misnomer from Quiché myth—may have been more analogous to those produced by the collapse of Rome. There probably took place the destruction or dispersal of such organized skill and documented knowledge as were never again available to the pre-Columbian nations, though on the fragments of the destroyed culture were built the magnificent barbarisms of Toltec, Aztec, and Yucatecan Maya.

The event has been explained by at least a score of contradictory theories. Of those, five at least still find champions among modern Americanists. Concerning neither the end of the Old Empire, nor its 450 years of history, is there a scrap of contemporary record extant which can be interpreted—even should the sculptural inscriptions of the ruined cities contain historical data. In the middle of last century a clue to the glyphic writing appeared to have been unearthed with the discovery, by the Abbé Brasseur de Bourbourg, of the three-centuries old manuscript *Relacion de las cosas de Yucatan*, compiled by Bishop Landa, one of the earliest and ablest clerics to come in contact with the New Empire Maya after the Spanish Conquest. The manuscript explains the Maya calendrical system in part and purports to provide a Maya ' alphabet '. But the calculiform signs set down by Landa have proved no Rosetta stone for the decipherment of either the few surviving New Empire codices or the glyphs on the monuments of the ruined cities. Neither New nor Old Empire Maya appear to have possessed an alphabet: the glyphic writing enshrines some sort of syllabary. In spite of years of research, carried out with or without the doubtful aids of Landa, and along the lines laid down by Forstemann and Seler, only a few signs, mostly astronomical, have so far been transliterated or interpreted. The Maya scholar examining the ruins of an Old Empire site is in the position of a millennial Malayan investigating the remains of London with no better equipment than a knowledge of our calendar and systems of notation. He can read the dates on the public statues and buildings, but is quite unable from the associated legends to identify a single individual or be certain of the purpose of a single building.

The correct correlation of Old Empire dates with the modern Christian (Gregorian) calendar is still uncertain, a process attempted with the aid of New Empire datings contained in the *Books of Chilan*

Balam. These are Yucatecan tribal histories reduced to writing by Christianized Maya *after* the Spanish Conquest, and set down in Latin script. Their evidence is frequently contradictory and has given rise to widely-divergent correlations. Certain German archaeologists still place the beginning of the eighth Maya cycle as late as the tenth Christian century, thus bringing the end of the Old Empire close to the opening of the Spanish conquest. But no such populous region as Xibalba of the thousand cities was discovered by the conquistadores: the Usamacinta and Guatemalan cities had been abandoned long before Cortes' famous march from Mexico to Honduras Bay. He certainly encountered no Maya whatever except the transplanted Itza on Lake Peten. At the moment two other correlations are in vogue—the Spinden-Morley, which places the beginning of the ninth cycle in A.D. 176, and the Bowditch-Joyce, which places it 270 years earlier, in 94 B.C. To the present writer, influenced by Sahagun's dating for the coming of the Toltecs to the Mexican Valley—though it is by no means certain that this event had any connexion with the Old Empire's fate—the Bowditch-Joyce correlation appears the more probable. But the matter, together with the complicated calendrical systems in general, is outside the scope of this article. A Maya cycle covered nearly 400 years, and the city-civilization of the Old Empire triangle appears to have come into being at or about the opening of the Christian era and to have closed towards the end of either the third or fifth centuries A.D. Rome and Copan, the dominant cities of the dominant empires of two continents, may have fallen on the same day.

The origin of the remarkable Xibalban culture is as mysterious as its downfall, and important in that it may offer some clue to the latter event. Professor Morley brings the old Empire Maya from the north, on the evidence of a small statuette dated towards the end of the eighth Maya cycle. This was found north of the Old Empire tract, in the state of Tuxtla. Still further north, on the Gulf of Mexico, is the tract of country inhabited at the time of the Spanish Conquest by the Huaxteca, a primitive people of Mayance speech. Professor Morley (who, like most Americanists, denies extra-American influence in the formation of the Xibalban civilization) marches his Early Maya down from the Huaxteca region. A progressive branch of the proto-Maya stock, they came southwards into Central America, acquiring en route their distinctive script and sculpture, and arriving in the Usamacinta basin prepared for the first adventure of civilization in the New World.

Of this migration there is, however, no trace apart from the Tuxtla

statuette, which may well have been an export from the Xibalban region. The Huaxteca are beside the point; to the west and south-west of Xibalba lay the territory of the barbarous Quiché, also of Mayance tongue. Neither they nor the Huaxteca had any knowledge of the script or fully-evolved calendar. If the Quiché also originated in the Huaxteca territory, and shared in the civilizing southwards migration, only racial amnesia would explain the complete absence of its influence in their primitive buildings and sculpture.

Dr Gann[5] regards as the Old Empire Maya the descendants of the 'Archaic' peoples of the Central American highlands; a branch migrated from those highlands to the sea-coast, acquired culture, and commenced city-building. He admits, however, an immediate lack of proof; there seems to exist far less connexion between the primitive pottery of the 'Archaic horizon' and Old Empire art than between the nebulous ancient culture and that of the Nahuatlaca (Toltec and Aztec) of Mexico, who were certainly late immigrants from North America. Neither Professor Morley nor Dr Gann attempts to explain why it should be that their Xibalban Maya, originating somewhere near the Gulf of Mexico, yet reared their earliest city—so far discovered—at Uaxactun, remote on the borders of British Honduras.

Captain Joyce[6] believes the Xibalban culture was evolved in the region where it is found, even though there are no traces of a period when the script and calendar were in a primitive state (they appear as highly developed on the first inscription as on the last). Other theories derive the Xibalbans from the Mound Builders of the Mississippi[7] and from 'Antilia', a fragment of submerged Atlantis itself submerged early in the third century B.C.[8] But in both cases the one certain requisite—a calculiform inscription—is missing. As part—an integral part—of the diffusionist heresy, Professor Elliot Smith[9] and Dr Perry[10] account for the Old Empire through the civilizing agency of the 'Children of the Sun', a culture drift of ruler-groups from across the Pacific, and with its original inspiration in ancient Egypt. But between any development of Egyptian picture-writing and that of Xibalba there is

[5] Thomas Gann, *Ancient Cities and Modern Tribes*, 1926. (Reviewed in ANTIQUITY, I, 357–6).
[6] *Mexican Archaeology*, 1914.
[7] J. Genet and P. Chelbatz, *Histoire des peuples mayas-quiché*, 1927.
[8] L. Spence, *Atlantis in America*, 1925.
[9] G. Elliot Smith, *Elephants and Ethnologists*, 1924.
[10] W. J. Perry, *The Children of the Sun*, 1923.

no similarity whatever. They are racial vehicles of thought evolved in the completest ignorance of each other.

Some two centuries before the opening of the Christian era, therefore, a people of quite untraceable antecedents on the American or any other surviving continent, in possession of an elaborate script and the most highly developed calendar yet known to us, began to build their great temple-complexes in a sporadic fashion in the triangle of Xibalba. Of their calendar Dr Spinden says : ' The Maya calculated an almost exact correction for the excess of the true year over the vague 365 day year. The excess amounts to about .24 of a day, and their correction seems to have been one day in four years for ordinary purposes and 25 days in 104 years for longer stretches of time. The latter correction is more accurate than that of the Julian calendar and nearly as accurate as that of the present Gregorian calendar put into service as late as 1582 '.

They used a vigesimal system of notation, apparently with considerably more skill than such a system warrants, and had discovered, in advance of Old World mathematicians by at least a thousand years, a sign for zero. The ' Venus-count ' of their calendars suggests a more highly developed technique in planetary observation than was possessed by any other culture before the invention of the telescope. They erected on the hills above Copan the gnomons of the greatest sundial in the world. These, Drs Spinden and Gann seem to suggest, were used for regulating the seasonal clocks of their civilization. In the same city there is an altar-freize which appears to portray a city-wide congress of astronomer-priests, met for that great rectification of the Maya calendar so frequently mentioned in Yucatecan tradition— ' the putting of Pop in order '. Such a congress of scientists at that time would have been impossible in any part of the Old World except China.

The first date of the Maya era (Spinden-Morley correlation) was 3485 B.C. Americanists generally regard this date as too remote to have historical significance, and as probably an invention of the Maya mathematicians for the purpose of synthesizing their various calendars into the elaborate unity attained by that calendar at least 500 years before its use on the monuments of Xibalba. But this reformed calendar is arranged for, and is capable of, dealing with periods of time as great as five million years. Such a concept of *elapsed* time in the world's history is the greatest achievement of the Early Maya mind of which we have any knowledge, and suggests to the imaginative

the possibility that the Xibalbans may have had some knowledge of the earth's geological phases.

As in ancient Egypt, architectural science was mostly devoted to the erection of temples and temple-adjuncts ; the frequent Xibalban ' towers ' may have been observatories. Certain other structures, perhaps used as priestly colleges or libraries, were also built in the ' central complex ' of each city. Those ' colleges ' have been compared to the North American Indian ' long-houses ', the tribal council-houses. There is good reason to believe that they were never, in our sense, palaces, though this term is frequently applied to them.

In spite of his achievements in abstract mathematics, the Xibalban had not discovered the principle of the true arch. The corbelled arch in use throughout the region made the building of a second storey almost, though not quite, impossible, and left all rooms exceedingly narrow and high. Also, it is doubtful if in the whole of the Old Empire tract there was ever an architect with a knowledge of bonding corners.

The phases of Xibalban sculpture have already been noted. It was undoubtedly a religious or temple art, even, perhaps, in the case of the elaborate stelae. These were menhirs sculptured, in greater or lesser degree, to the likeness of statues—sometimes undoubtedly portrait-statues—and were raised at regular intervals in the plazas of the cities, and profusely dated and inscribed. Captain Joyce assigns Old Empire sculpture, especially as manifested on the panels of the Palenque palaces, a higher technical level than Babylonian or even Egyptian. That it was ever other than formal, the portrayal of types, not individuals, has been denied. But the extraordinarily individualized sculptures discovered in an underground chamber in Comalcalco in 1926, by Messrs Blom and Le Farge[11] of the Tulane University expedition, effectively prove the contrary. Some of the Palenque statues probably represent women.

Whether on temple walls or on stelae the sculptured figures are apparently always those of priests or priestesses. None of the figures in the Central Xibalban or southern area is portrayed with weapons. Captain Joyce concludes that the Maya Old Empire was singularly peaceful, and probably under some central government. The building-complexes have no appearance of being fortified. Dr Spinden and Professor Morley point out, however, that not all the scenes portrayed are of peaceful character. In northwestern (and presumably border) towns

[11] F. Blom and O. Le Farge, *Tribes and Temples*, 1926.

such as Piedras Negras representations of tortured warriors bound to trees and of disarmed and dejected captives squatting in front of triumphant conquerors have been discovered. The border position of the cities containing such sculptures must be emphasized. There is no good reason to think that civil war was common in Xibalba. Possibly the government of most of the cities, whether or not these were leagued in a political as well as a cultural ' empire ', was theocratic in character. Except for the members of a priestly militia, the warrior had probably passed entirely from the Maya scene.

The general type of portrayed Xibalban has a full, heavy face, a retreating forehead—head-malformation was undoubtedly practised—blank and rather expressionless eyes—the statues were probably painted—and ears distended with great copper plugs. This was evidently the dominant type of Old Empire Mayan. Dr Gann, in the course of his yearly explorations in Central America, has come to the important conclusion that the bulk of the populace differed both in race and origin from the ruling caste. The sculptured figures of subsidiary priests, apparently not of the dominant race, are fairly frequent, and possibly represent freedmen elevated from a subservient race of helots. The Palenque stuccos are rich in portrayal of sacrificing or worshipping priests standing on the backs of crouching grotesques who are possibly slaves. Substantial proof that two distinct races did indeed occupy the Old Empire tract simultaneously might also provide an important clue to the end of that Empire—a possibility which Dr Gann does not pursue.

From excavation and the evidence of the sculptures a little is known of Xibalba's manufactures in pottery and textiles. But we still know nothing, directly, of its religion, social organization, agriculture, or—a matter of keen dispute—its knowledge of metals—though the astronomical and mathematical achievements of the Old Empire Maya would place them high in at least semi-civilized status were their implements and weapons proved to be sub-Macaulayan. Gold was worked. A few ornaments of copper or ' accidental ' bronze have been unearthed. In view of the amount of flint and obsidian tools and utensils discovered, reinforced as these discoveries are through judgment of the ruins by certain artistic criteria, it is usually maintained that the buildings were raised and the sculptures and inscriptions executed with the aid of stone implements only. Mr Hyatt Verrill,[12]

[12] A. H. Verrill, *Old Civilizations in the New World*, 1929.

writing of his researches among the ruins of the apparently Maya-influenced Coclé culture of Panama, makes a disturbing interpellation in the unanimity of archaeologists :—

'On one occasion I selected several hundred stone tools and implements obtained from the site of the Coclé temple, and, outlining a coarse, simple scroll upon a fragment of soft stone which was a portion of an elaborately sculptured column, I set four of my Indians to work upon it with the prehistoric tools. Although the four were unusually intelligent and skilful men, and despite the fact that they worked and laboured diligently for a week, and broke or wore out all of the stone implements, their united efforts failed to result in any noticeable carving or even in a recognizable pattern in the stone'.

The dense forests which immediately surround the Xibalban ruins at the present time are re-encroachments of jungle upon originally cleared spaces. In view of the amount of labour necessary to rear the great temple-complexes, Professor Morley calculates that the population of the Old Empire tract was at least 500 times as great as at the present day. On the analogy of Chichen-itza and other New Empire cities at the time of the Spanish Conquest, Copan and Palenque may each have numbered its citizens by the hundred thousand.

To support such populations the presumed maize-plantations must have stretched for leagues around each city. Considering the number of those cities, and the certainty that still more will be discovered, even the more conservative Americanist finds himself compelled to picture the whole of the Usamacinta basin—to take only one region—as almost one vast garden at the height of the Old Empire's prosperity, with the forest-lands reduced to narrow strips. Dr Gann believes that some form of intensive cultivation was practised in the neighbourhood of the cities.

With such-like aids of scattered fact and deduction an uncertain glimpse is obtained, through the darkness of fifteen centuries, of the flowering of a civilization at once childish and precociously mature. Superficially, it had every evidence of vigorous life and promise of spreading abroad its cleruchies all over Central America. Its traders had probably reached as far north as New Mexico ; Sr. Max Uhle[13] discovers Maya cultural evidences remotely south in Ecuador. And then, in ones and twos, unrelatedly, the Xibalban cities are abruptly

[13] M. Uhle, *Las Antiguas Civilizaciones Esmeraldeñas*, 1927.

abandoned, the Old Empire tract entirely deserted, and, in the opinion of Professor Morley, left so deserted for over 800 years.

The first defection occurred in 9.13.0.0.0 (A.D. 163 in the Bowditch-Joyce correlation) when Palenque, the Old Empire Florence, ceased to date its monuments and was presumably abandoned. It had had a life history of barely sixty years, and during that period gives evidence of having risen to cultural heights unsurpassed by any other Xibalban city. It is possible that Comalcalco, in the extreme northwest, was abandoned at the same time. There followed a pause. Then, between 9.18.0.0.0. and 9.19.10.0.0. (A.D. *c.* 262—293) the first American civilization appears to have suffered blow after staggering blow. First, about A.D. 267, the great southern city of Copan, the cultural and possibly the political capital of the Empire, ceased to date its monuments. In the same year Menche (Yaxchilan), lying far in the north, midway the cities of the Usamacinta basin, was abandoned. Five years later gives the last date found at Ixkun. In 9.19.0.0.0. Piedras Negras in the north, Uaxactun in the east, and Quirigua in the south, separated by almost the entire stretch of Xibalban territory, the guardians of the surviving triangle, were extinguished. Naranjo went next, in 9.19.10.0.0. Of the whole Empire only Seibal and Tikal were left.

This list of dates, the hour-strokes for the death of the great pre-Columbian culture, is amplified by no direct historic data whatever. In A.D. 301 two events, faintly illuminating, apparently took place: Benque Viejo and Flores were *founded*, the former destined to last a brief twenty years, the latter forty. For by 10.2.0.0.0. (A.D. 340) the two elder cities of Seibal and Tikal, together with the short-lived Flores, had also been abandoned, and the entire Xibalban territory presumably depopulated.

No clear view of the magnitude of this tragedy can be gained without stressing the astronomical and mathematical achievements of the Xibalbans and the density of population which the city-centres must have possessed. The catastrophes or catastrophe which burst on the Central American triangle depopulated the region of no sparse and barbarous tribes: it killed the promise of a high civilization and may have affected the fortunes of millions. Whatever the remnants of Xibalban culture transported to Yucatan, whatever the number of fugitives which formed the Great and Little Descents of Yucatecan legend, it is certain that thousands of Old Empire Maya, including probably most of the members of the dominant and cultured castes, perished. In the founding of such minor sites as Flores and Benque Viejo it is

possible to see temporary gatherings of refugees, but behind, in the great basin of the Usamacinta and surrounding country, from Quirigua to Tikal, either wholesale extermination or equally wholesale relapse into barbarism overtook the Maya.

Dates later than 10.2.0.0.0. survive outside the Xibalban region at three sites, Tuluum and Chichen-itza in Yucatan, marking the founding of cities by eastwards-straying refugees, and Quen Santo, remote in the west, on the Chiapas border, a city which appears to have lasted a bare twenty years.

The supreme difficulty in finding a theory to explain the facts satisfactorily is the sporadic fashion in which the cities appear to have been abandoned. Captain Joyce hazards a guess at a southwards descent of barbarians—the 'Toltecs'—as part-cause. Somewhere towards the end of the third century A.D., according to Sahagun's dating of the Mexican traditions, new tribes (now considered to have been of Shoshone blood and of the same Nahuatl racial stock as the later and more famous Aztecs) were reaching the Mexican Valley, slaying the quinametin, or giants, and bringing records of migration from an unidentified Huehuetapallan. These tribes seem to have ranged in culture from the palaeolithic savagery of the Chichemacs to the comparatively advanced barbarism of the Toltecs, or 'Builders'. (The name of the latter suggests the fantastic possibility that they may not have been of pure Nahuatl stock, but partly composed of descendants of the Mississippi Mound-Builders). It is therefore possible, though not very probable, that by the end of the ninth Maya cycle either these invaders or some autochthonous tribes displaced by them, were pressing on the northwestwards outposts of the Old Empire. But it is hardly likely that effects of the Nahuatl invasion were felt in Central America as early as 163, when Palenque was abandoned.

Further, as Captain Joyce himself has pointed out, the temple-complexes show no trace of forcible capture by invaders. Against this might be urged the likelihood that such invaders, burning and destroying the wood and adobe cities, would probably, through motives of religious dread, leave the stone-built centres intact. In the circumstances the possibility of a great pre-Toltec raid across the Grijalva to the destruction of Comalcalco and Palenque cannot be ruled out entirely. But it could have been little more than a raid, seeing that most of the other Xibalban cities survived it by at least a century.

Copan may have been overthrown by southern barbarians, but the fall of Menche, far in the north and at the same time, cannot be

explained by any theory of invasion. Piedras Negras, still further north along the Usamacinta River, survived it a good five years. Yet Piedras Negras itself, together with Uaxactun and Quirigua, impossible for a common enemy to attack—Uaxactun could have been attacked only from Yucatan and it is fairly certain that the Peninsula was still uninhabited—were all abandoned in the same year. Nor, if Uaxactun was violently overthrown by foreigners, is it possible to explain why Tikal, twelve miles distant, should survive the older city by a good sixty years and then be itself extinguished.

Dr Spinden is explicit: 'The explanation of the eclipse of all that was finest in Maya civilization is not far to seek. Any long-continued period of communal brilliancy undermines morals and religion and saps the nerves and muscles of the people as a whole. Extravagance runs before decadence and civil and foreign war frequently hasten the inevitable end'.

Professor Morley is equally explicit:

'While it is undoubtedly true that flamboyancy in decorative motives increases steadily during the Great Period (of Xibalba), reaching on the last monuments at the different cities to an almost bewildering ramification of detail, it does not follow that the Maya could not have carried out this extravagance of design even further if they had had more time in which to do so; and, so far as technique, treatment, and the like are concerned, the latest monument in each city is technically the best, showing no loss in skill and proficiency in technical processes up to the very end'.

He himself accepts, tentatively, as do Messrs Blom and Le Farge, the theory which has perhaps the most supporters at the moment. This is that the Xibalbans' methods of agriculture, probably as primitive and wasteful as those of their descendants in Yucatan, gradually exhausted the land surrounding each city. Populations multiplied and the circles of cultivation grew tough mats of grass and weed impossible for the Maya hoeing-stick to penetrate. Agriculturists had to push further and further out into the jungle, bring more plantation stretches under cultivation, and in time find those stretches also grow barren in their hands. Ultimately, huge concentric rings of unproductive grassland surrounded each city and civilization broke down on the problem of transporting, without the aid of domestic animals, the produce of the leagues-distant plantations to the teeming centres. The populations therefore abandoned the cities—the oldest sites earliest

since these were surrounded by the widest circles of unproductive land—and drifted eastwards into Yucatan in search of virgin territory.

There are certain serious drawbacks to the acceptance of this theory. We know nothing of Xibalban methods of agriculture. It is doubtful if the primitive methods ascribed to the Old Empire Maya were practised extensively even among their degenerate descendants of the New. The Old Empire cannot be judged by study of modern Maya—degenerate descendants of degenerates. Dr Gann's Maya, with some knowledge of intensive agriculture, seem much more probable. Further, the respective ages of the cities are far from supporting the theory of soil-exhaustion. Palenque was abandoned after a bare sixty years of occupation, Quirigua after eighty-five, Ixkun after thirty. And it is unlikely that the soil of Benque Viejo became exhausted in twenty years while that surrounding Uaxactun remained productive for over four hundred.

Dr Gann leans to the belief that the Xibalban Maya abandoned their homes and set out on the stupendous eastward exodus at the command of their priests, in the fulfilment of ' ancient prophecies '. He cites, as analogous, instances of modern Maya tribes suddenly abandoning prosperous regions for obscure religious motives and also quotes what has long been thought to be the classic New Empire example of ' abandonment-complex '—the desertion of the great metropolis of Uxmal by the Tutal Xiu, who decamped overnight to the miserable nearby townlet of Mani. But it is safe to assume that no people abandons such habitat as Xibalba, hallowed as it must have been with memories of the greatest triumphs of the race, under no other compulsion than priestly prophecy. The priests themselves, town-dwellers to a man, would have been the first to suffer in such voluntary migration. Certainly, if they instigated the abandonment of the Old Empire cities, their prophetic powers were at fault, for in the resultant confusion of centuries the presumed theocracy of Xibalba was succeeded by the congerie of warrior-ruled states in Yucatan. Whatever the aberrations of modern Maya tribes the Tutal Xiu appear to have had reasons urgent and cogent enough for their flight from Uxmal : the abandonment took place immediately after the great pestilence described in such grisly detail in Landa's *Relacion*.

The pestilence theory to account for the depopulation of the Old Empire is no longer entertained seriously. It, also, fails to explain why the cities were neither suddenly nor progressively abandoned, but given up haphazard, without regard to grouping or position. Nor would

a great pestilence have taken nearly 150 years, from 9.13.0.0.0 onwards, to sweep the country.

Professor Morley devotes a considerable amount of space to a detailed examination of the belief of Dr Huntington that about A.D. 600 (which fits in with the Spinden-Morley correlation of 10.2.0.0.0 as A.D. 610) climatic changes on the Pacific coast of the United States resulted in a rapid decrease in the rainfall, reducing great stretches of country to desert land. At the same time, apparently as some sort of equipoise, the rainfall in Central America, and especially along the basin of the Usamacinta, increased and stimulated forestal growth to such an extent that the jungle advanced and devoured the plantations. Maya agriculture found itself faced with entirely incomprehensible seasonal conditions and staggering difficulties both in weeding and reaping. With the increased rainfall, transforming great regions of the cultivated Xibalban garden into swampy forest land, the breeding-grounds of the mosquito were greatly extended. As probably happened with Rome, the Old Empire was assisted to its fall by the failure of a primitive medical science to combat the spread of malaria.

Undoubtedly great areas in the vicinities of the cities show evidence of natural re-afforestation. But this may have taken place—would, in the nature of things, have taken place—without any increase in the rainfall. Climatic conditions in such regions as the Tikal-Uaxactun at the present day seem quite incompatible with the southwards extension of Dr Huntington's ingenious theory. Dr Gann and other archaeologists make constant reference to the lack of water near the Old Empire sites : exploration has to be carried out in a country at once parched and clothed in luxurious vegetation. The possibility of an entire failure of the water supply appears more likely than an increase in the rainfall.

Individually inadequate, most of the theories of abandonment can yet be grouped in a plausible explanatory mosaic. Art grown flamboyant and decoratively archaistic may be no proof of decadence, but it points, at the least, to a flagging of the cultural impulse, a low spiritual vitality, and it is not too much to assume a lessened power of resistance to violent change as their concomitants. Xibalban agriculture may not have been of the excessively primitive character imagined ; yet, faced with sudden and incomprehensible climatic changes—of whatever nature—in an era when the creative spirit was at its lowest ebb, it may indeed have proved unable to cope with the situation. Cities may have starved and under such desperate circumstances priestly

leaders prophesied lands of plenty in the uninhabited and unexplored Yucatecan peninsula. Additional spurs to exodus may have been supplied by the sporadic raidings of barbarians or the incursions of equally sporadic pestilences.

Even so, the piecemeal evacuation seems to lack a central motive. A development of Dr Gann's contention that more than one race peopled the Old Empire tract may supply a clue. The high culture which raised its first monuments in Xibalba *circa* 200 B.C., may have been of extra-American (though apparently neither Asiatic nor European) origin, and the script, calendar, and mathematical systems originally un-Maya. The mysterious culture-bringers may have enslaved the autochthonous Maya—of the same stock as Huaxteca and Quiché—and ruled as an alien theocracy in the Central American forests for nearly five hundred years. The subject race, from the sculptures seemingly a slight and undersized race having little resemblance to the tall, Cro-Magnon-like dominant caste, was probably, even at first, as numerically superior to its conquerors as the English to the Normans.

All the evidence leads to the conclusion that the dominant Xibalbans —like the Babylonians—were warriors only under pressure. Established in control of a highly-organized helot state, they may have abandoned arms entirely for those astronomical, religious, and mathematical passions to which their ruined cities bear witness. As a ruling, alien caste, their history may have paralleled very exactly that of the Aryan Brahmans in India, until freedmen, inevitable in a slave or serf state, gradually formed a third class in the Xibalban communities. An upwards infiltration of helot blood may have followed, till finally sharp distinctions of descent were lost and the ancient culture weakened. Even before the archaistic efflorescence there seems evidence of a mind, in some fashion semi-alien, influencing sculptural motif. A certain coldness and clumsy dignity has been lost. The technique is indeed maintained, but an eager, showy quality has entered both concept and execution. Absurd mistakes in the datings of inscriptions become frequent.

A state with a ruling caste and culture weakened, but still half-alien to the body of the serf populace, and subject to helot-risings: this may have been the Xibalba on which disasters descended from external sources and finally drove long drifts of refugees into Yucatan in confused hijra under the leadership of half-caste rulers.

No new theory or subtheory, however, can assume other than a questioning-explanatory attitude. Confirmation or refutation may

come with the decipherment of the inscription texts. Even should these, as is probable, contain historical data, there seems little or no chance that any sculptor-scribe of the last sixty years of the Old Empire realized that he was living history and made record of the confusion around him, the fall or abandonment of neighbouring cities, the waves of anger and hope and terror that must have swept through the forested lands as the Maya civilization crashed to its fall. Nevertheless, there are remote possibilities that investigators in the country southwest of Bakhalal may yet unearth or uncover some such record—that, indeed, a cast of it may already repose, unread, in some American or European museum !

For it seems that even part-solution of the most fascinating problem in American history must be prefaced by still more intensive and organized study of the glyphic writing, elucidation one by one of each calculiform sign, and—a task hardly yet begun—codification and elaborate cross-referencing of those signs in a glyphic dictionary.

Illustrations

The accompanying plates illustrate the various phases of Maya art, its growth and decline:—

I. The archaic phase.

II. The formal phase.

III. The crowning achievement of the naturalistic, and yet foreshadowing the flamboyance of the archaistic, phase.

IV. From Palenque. The Northern naturalistic phase at its best. Probably individualized studies. An elaborate feather headdress is being presented to a priestly ruler, who is seated on a couch carved in the shape of a double-headed jaguar.

V. The famous slab from the so-called Temple of the Sun, Palenque. Two priests are making offerings of figurines on either side of a spear-slung emblem of the Sun God. The right hand figure is the most perfect in Maya sculpture. Such portion of the glyphs as can be transliterated give a date approximating (in the Bowditch-Joyce chronology) to A.D. 114. The crouching grotesques (generally identified as ' mythological figures ') are probably representations of the conquered Maya who may have been enslaved by a civilized, alien theocracy, as suggested in the text.

Grim's Ditch in Wychwood, Oxon.

by O. G. S. Crawford

THERE are many Grim's ditches in the South of England; and there are other ditches of similar appearance and dimensions which, though not called by this name, may have had the same origin. Amongst them probably is Wansdyke, more correctly called Wansditch, and originally Woden's ditch. Locally these earthworks are now generally known as the Devil's ditch. I shall describe here the course of one such Grim's ditch, based upon field-work carried out during the spring and summer of this year, in the course of which I both walked and flew along the whole course of the various ditches mentioned and was able to add many miles to the portions previously known. They are as follows :—[1]

(1) The Wychwood Grim's ditch, North Oxfordshire, described below

(2) The Aldworth Grim's ditch, Berkshire

(3) The Mongewell Grim's ditch, South Oxfordshire

(4) The Chiltern Grim's ditch, Buckinghamshire and Hertfordshire

(5) The Pinner Grim's ditch, Middlesex.

Nothing absolutely certain is known of the age or purpose of any of these ditches, for, with a single exception no excavations have been made in any of them; and in the one case where this was done the results were inconclusive. Few nowadays, however, would regard any of these five Grim's ditches as prehistoric, and most would assign them either to the late Roman or the Early Saxon periods. They would thus fall somewhere within the extreme limits of A.D. 300 to 700, and more probably within the first part of this period. This view is partly based on the results of excavation of similar 'defensive frontiers'

[1] The Ridgeway Grim's ditch, running along the slope or brow of the escarpment of the Berkshire Downs, is of quite a different character from the rest and is probably prehistoric.

such as Wansdyke and Bokerly dyke,[2] neither of which can have been constructed before the end of the 4th century A.D., and of the Cambridgeshire Bran ditch, which has recently been proved to be of Anglian origin.[3] We know that both the Romano-Britons and the Anglo-Saxons employed this method of defence, and each instance must therefore be judged on its own merits. For topographical reasons it seems impossible to doubt that the Wychwood Grim's ditch was made by the Romano-Britons; and there is no reason to question the attribution of Offa's dyke to King Offa.[4]

Hitherto the Wychwood Grim's ditch has been the least known and least studied of all of them. It is mentioned in the perambulations of Wychwood Forest[5] in the year 1300, and in a 17th century Parliamentary Survey.[6] There are casual references to it by Plot[7] and Aubrey;[8] Plot's account is the fullest but it is very confused. Hearne walked along part of it; and obtained from a farm labourer, an 'elderly man' of Ditchley, the valuable information that it continued from there to Charlbury, Cornbury and Ramsden 'where it joins with the Akeman Street'.[9] This is quite correct, and it is the only definite reference I have come across to the south-western portion, which I discovered independently before I had read Hearne's note. Of the later references Warton's[10] is the fullest, but neither he nor Guest[11] and Akerman[12] understood the ditch or contributed much to our

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[2] The name Bokerly dyke as applied to the intrenchment is of modern origin. It was called Grim's ditch by Aubrey in the 17th century and by Warton in the 18th.

[3] Proc. Camb. Ant. Soc. 1929, xxx, 78–96.

[4] The whole question of these dykes in general was dealt with by Dr Cyril Fox in ANTIQUITY, III, 135–54.

[5] 'Et sic per medium Dustlesfelde usque Grimesdiche, et sic directe per dictum Grimesdiche inter boscum de Bloxham et boscum de Spelesbury'. P.R.O. Misc. Roll 113, Membr. 8, printed in *Archaeologia*, XXXVII, 435. Another version of the same perambulations, dated 1298, is printed and collated with the former in the *Cartulary of Eynsham*, edited by the Rev. H. E. Salter, 1908, vol. II, pp. 92–96. (Oxford Historical Society, vol. 51).

[6] Field or ground called Ledwell Sartes adjoining to Rawlins Crosse and 'Grymesditch'. P.R.O. Land Revenue Miscellaneous Books, vol. 202, fol. 32b.

[7] *Natural History of Oxfordshire*, 1677 edition, p. 321.

[8] *Monumenta Britannica* (ms. in Bodleian Library, Oxford).

[9] Hearne's *Collections*, VI, 187–8, sub anno 1718 (Ox. Hist. Soc., vol. 43).

[10] *History of Kiddington*, by T. Warton, 2nd edition 1783, pp. 60, 61.

[11] *Origines Celticae*, by Edwin Guest, 1883, vol. II, p. 151.

[12] *Archaeologia* 1857, XXXVII, 424–440 (map).

FIG. 1. THE WYCHWOOD DISTRICT, SHOWING COURSE OF GRIM'S DITCH

knowledge of its course. The only account of any real value is that of Colonel Lane Fox (better known as General Pitt-Rivers).[13] He concluded, from his personal observations in April 1868, that the Wychwood Grim's ditch was 'not merely a boundary, but without doubt a fortification. . . . Other considerations are favourable to the view of its being a Roman earthwork. . . . It may have been thrown up by the Romans to defend a Roman settlement'. I had come to the same conclusion before I read the general's paper. That he regarded the native Britons as the enemy against whom protection was sought was a natural error to fall into sixty years ago. The important facts which he recognized were that it was primarily defensive and that it protected a group of Romano-British settlements. Neither of these facts can well be disputed. Finally, the account in the Victoria County History[14] records for the first time a subsidiary entrenchment 'which formerly ran east and west at 100 yards north of Shilcott Wood, above Ditchley New Park and parallel with that section of Grim's ditch from Ditchley Park to the Model Farm. It has disappeared in the fields, but can still be traced where it crosses the old trackway which runs down the west side of the park, and which at this spot is a grass-grown lane'.[15]

When, therefore, I began to investigate Grim's ditch in Wychwood, the known portions consisted merely of a sector a mile and three quarters in length running through Ditchley Park (with the outlier just mentioned), and of two discontinuous fragments of a total length of a mile in the woods between Ditchley and Wootton. It was evident, as Hearne and others have stated, that the fragment in Blenheim Park (called 'intrenchment' on the Ordnance Map) was a southern continuation of it, but no one except Hearne's old countryman had suggested that any portion was to be found south of the river Evenlode. Half a mile south of the village of North Leigh, however, the Ordnance Map marks another 'intrenchment' running east and west for 700 yards. This fragment I succeeded in tracing westwards and then northwards for a further distance of four miles, to the edge of Cornbury

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[13] Journal of the Ethnological Society, 1869, vol. I, pp. 2–4 (read 1868).

[14] *Oxfordshire*, 1907, II, 339.

[15] This is the 'merewey' of the perambulations, and there can be little doubt that it was in use, probably as a main artery of native origin, during the Roman period. This would account for the making of an additional entrenchment across it, though here the work is outside the area, not inside it as are those on Callow Hill.

Park. It thus proved to be part of that same continuation of Grim's ditch on Ramsden Heath referred to by Hearne. In this new sector there is only one break, of about two thirds of a mile, in Singe Wood and between it and Akeman Street, where old diggings have destroyed it. It is quite plain as far as Finstock Heath (6 inch Oxon, 25 NE) where it runs up to an ash-pollard and is then lost. There can be no reasonable doubt, however, that it went on to the Evenlode, though all my efforts to trace it further, both on the ground and in the air, have failed.

This northern portion was not at first connected with the already marked 'intrenchment' more than 3 miles distant to the southeast, which to begin with I assumed to be quite a separate work, unconnected with Grim's ditch. I discovered it quite accidentally, when looking for what I imagined to be something quite different. I had gone to Ramsden Heath to look for the remains of a certain 'hulwerk',[16] last heard of many centuries ago. The name evidently meant 'hill-work', and the suffix implied that it was an earthwork of some kind. The hill on which it must have stood was easy to locate, being the highest in the immediate neighbourhood, 556 feet above sea-level. As I was bicycling along the road, in a field on the south side I saw the angle of an old bank and ditch protruding from a field-hedge. I thought at first that it would turn out to be a moated enclosure of medieval date; but on inspecting it I found that it continued more or less in a straight line in both directions from the angular point, connecting up eventually with the 'intrenchment' already marked on the map. Naturally the tracing out of this work took several days; and even when I had done all I could on the ground there still remained a gap of a mile, between Poffley End and Singe Wood, where all remains of it seemed lost. This gap was filled by observation from the air. Flying along it for this purpose, I observed a broad band of darker green corn crossing a field diagonally, and continuing (as a mark of some kind or other) to the western end of Spicer's Lane (6 inch sheet 26 SW). This was the point to which I had already got it, working westwards. I flew along

[16] The name is variously spelt in the perambulations—Hulworke (1298), Hulwerke (1300), Hulwerk (1642). The last reference occurs as follows:—'et sic per communem regiam viam in Ramsden Heath alias Hulwerk, ducentem a burgo de Woodstock', etc. This suggests that the name had become almost or quite obsolete in the 17th century. Another reference to a 'Hulwerke' near Loueburyhurne in the 1298–1300 perambulations probably refers to the rectangular earthwork there, which I located and marked on the map.

this sector on several different occasions and satisfied myself that what I saw was the authentic Grim's ditch. Then I went along it on the ground again. But there I could still see nothing, even though I now knew exactly where to walk. Even the broad green line in the corn was totally invisible from below.

Eastwards I failed to trace it both on the ground and from the air. There can, I think, be little doubt that it followed the direction of the modern road from North Leigh to Long Hanborough, perhaps coinciding for some distance with the parish boundary. There are, however, no visible remains anywhere, except perhaps at one point. In a square field northeast of Breakspear's Kilns (26 SW), which are next on the east to the inn called Shepherd's Hall, I noticed from the air a broad band running parallel to the Witney road at a distance of about 100 yards south of it. The field is under grass and was then laid up for hay: but, apart from an ancient field-division and a belt of ragwort in flower, I could see nothing on the ground. (This, as we saw above, proves nothing). There is one other possible clue. In the bounds of Eynsham, A.D. 1005, there is mentioned at about this point an ' old ditch ' on a ' heath-field '.[17] The parish boundary runs only a short distance to the south, and the old ditch may well have been Grim's ditch. I suspect that the ditch followed the course of the modern road as far as the Evenlode near Hanborough ; but apart from an occasional ' bankiness ' on the southern side near the Row, there are no signs of it, and even those mentioned are too slight to be considered seriously without further and more conclusive evidence. The ditch may have taken another course altogether.

The northern sector runs from the Evenlode at Charlbury to the Glyme between Wootton and Woodstock, but its course is curved, not straight. The only gap of any length is east of Charlbury where in medieval times the common fields of the town lay. It is well preserved in Ditchley Park, the best portion being along Love Walk, between the house and the Model Farm. Passing north of the house—it is lost on the lawn itself but visible on the west—it reappears beside the Kiddington drive which it crosses at an oblique angle. North of Outwood and Notoak it must have made a right angle turn southwards. Northwest of Slape Bridge it approached a promontory fort which has got confused with it; that is natural, for the continuation of Grim's ditch south of Slape Bottom is a direct prolongation of the line of its

[17] Kemble, *Codex Diplomaticus*, III, 342.

rampart, which is on the *east* side of the ditch and cannot therefore be part of Grim's ditch. It passes immediately behind (west of) Woodleys Farm, where there is a well-preserved fragment, and continues southwards into Blenheim Park. It enters the park 130 yards west of Ditchley Lodge and is well preserved in the plantation bordering the park, just inside the park wall. It can be followed across a ploughed field by means of a stony belt, on the west of which Romano-British potsherds are abundant. Then it passes immediately east of North Lodge and joins up with the ' intrenchment ' already marked on the map. This intrenchment makes a sharp turn eastwards *exactly* at the point where it crosses the Roman road, Akeman Street ; it was here that the late Professor Haverfield excavated it.[18] The ground here has been much disturbed, so that excavation might be expected to prove inconclusive unless carried out with a finesse that was almost unknown in those days; otherwise it might even prove misleading with regard to the relative ages of bank and ditch. In any case it was inconclusive and had better be forgotten.[19] Apart from anything else, the sharp bend strongly suggests that the Roman road was already there when the ditch was made. South of the Roman road is the best preserved sector of all ; here it has never been disturbed, and the top of the bank is about seven feet above the bottom of the ditch.

Immediately north of the Roman road are some pits which were excavated by Professor Haverfield and found to contain Romano-British pottery ; they were probably the site of huts.

The visible portion of Grim's ditch ends abruptly in arable land south of Furze Platt Farm ; but outside the park, in the fields northwest of Field Barn, a dark line in the corn can be seen from the air extending from the Chipping Norton road to the Glyme at Stratford bridge. On the ground there are no signs of anything but a hump in the cart-track from the barn to the road. It seems that the ditch ended at Stratford bridge. The peculiar course followed here may have been designed so as to outflank an enemy approaching from the east along Akeman Street. Having crossed the river, he would thus be exposed to attack from both front and rear by a force lying in wait behind the ditch.

Grim's ditch, then, encloses, or nearly encloses, an area ; and

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[18] *Proc. Soc. Ant. London*, 1899, XVII, 333–5.

[19] Excavations to determine the age of Grim's ditch and its subsidiary defences are badly needed. Callow Hill is the place to dig. Will not someone do it ?

this is a unique feature. Starting probably somewhere in the neighbourhood of Long Hanborough, it proceeds southwestwards, then bends round by Hailey and takes a northerly course to Cornbury Park, crosses the Evenlode and runs northeastwards through Ditchley Park, then bends round southeastwards to Blenheim Park, and then turns northeastwards to the Glyme. It faces outwards, having the ditch always on the outside of the bank ; and it was presumably intended to protect those who lived within it.

Now within this area of about 22 square miles are no less than five Roman villas and half a dozen or more sites where Roman remains have been found.[20] But the most interesting and important site in the district is Callow Hill. It has long been vaguely known, and has often been described as a villa, though without adequate reason. It may have been a villa; but it was more than merely that. The visible remains lie within a large rectangular earthwork about 220 yards long from east to west and 140 yards broad. The principal object is a low broad mound in the northeast corner, probably the remains of a building. Romano–British pottery is abundant within the enclosed area. From the air many marks can also be seen in the field beyond the lane on the west. The most important objects, however, for our present purpose are two defensive banks with ditches, which run from north to south across the ridge, east of the site of the building. (One is already marked on the map ; the other I discovered myself). The northern ends of both ditches rest on the rivulet in Slape Bottom where they terminate. Southwards they end abruptly in ploughed land north of Wootton Wood. (That they actually do end here is fairly obvious on the ground, and is confirmed by air-observation). They face eastwards and bar access to the Roman site from the east. Thus they reinforce Grim's ditch, which they resemble in size and character. Presuming that in Roman times there was a native track or ridgeway leading from here into the Cotswolds, these barriers would effectively check the progress along it of an invader who might have been held up in his attempt to enter the region by way of Akeman Street. He would be caught between these ramparts and the valleys of the Glyme and Slape.

[20] The site of a Roman tile-kiln 'in the valley between Stonesfield and North Leigh, not half a mile from the course of Akeman Street' is not marked on the map (fig. 1) because the foregoing is the only account of it, and the description is too vague to plot. (Warton, *Kiddington*, 1783, p. 59). A bibliography of these and other Oxfordshire sites, compiled from the Percy Manning MSS. at the Ashmolean, was published by Mr E. Thurlow Leeds in *Archaeologia*, LXXI, 227–64.

The square enclosure may have been constructed in late Roman times to defend a house already in existence there. Such fortified houses are already known in the west (at Ely, near Cardiff) and in the north (at Castle Dykes, near Ripon, and at Langton, near Malton). It is generally supposed that they were fortified against marauding bands of Picts and Scots. But it seems just possible that the whole area enclosed by Grim's ditch may have been put in a state of defence on the lines of an organized scheme. There is evidence of other rectangular enclosures along its margin ; and though in no instance except on Callow Hill is the evidence at all conclusive, there is enough to justify further investigation. The sites are as follows :—

(1) Notoak, east of Out Wood. Here I was informed by the farmer that he had found many Roman coins (one of silver), and the discovery of Roman coins in or about 1863 is recorded on the Ordnance Map (Oxon. 21 SW). From the air I noticed a rectangular enclosure here.

(2) The Model Farm, Ditchley. The former existence of a rectangular enclosure here is vouched for by the Ordnance Survey (one inch map, 1833) and by Akerman, who, however, does not mention it in his article (*Archaeologia*, 1857, XXXVII, map). I cannot find any reference at all to it, or to its destruction, presumably when the Model Farm was built.

(3) Cornbury. There still exists a small square earthwork on the southwest bank of the Evenlode, immediately opposite the end of Grim's ditch on the north bank. It is however much smaller than the preceding two.

(4) On a high hill about midway between Finstock and Cornbury House, are the remains of some sort of ancient enclosure. I noticed them first on the ground, where a squarish area is surrounded by a low broad stony bank, much spread by cultivation. There are however no signs of a ditch and no potsherds lying about. From the air the shape appears less square, and seems to be irregular.

I state these facts not to support any hypothesis but to clear the ground for further investigation which is badly needed here.

The Stonesfield area was important in Roman times for several reasons. It was probably one of the places where roof-tiles were quarried to supply the numerous villas of the region. It is certain that at Stonesfield itself there was a flourishing industry in slat-making throughout medieval times ; indeed it has only recently become extinct. All round the village are spoil-tips of Stonesfield slate, and it is said that the workings extend far underground. In Roman times too, therefore,

there may have been some industrial activity here, and a slight concentration of population in consequence of it.

Another reason is geographical. If we look at the Ordnance Survey map of Roman Britain (2nd edition)[21] we shall see that, in this part of England, there are two areas where Roman remains, principally villas, are most abundant. One is the Cotswolds proper, round the market-town of Corinium (Cirencester); the other is North Oxfordshire, and extending northeastwards into Northamptonshire and southwards down the Thames Valley to Dorchester. Its market-towns were Alchester in the north and Dorchester in the south. These two regions were nearly but not quite separated from each other by a tongue of forest-land projecting southwards down the Evenlode Valley. This tongue comes from the great midland forest. It nearly meets the forest of the Upper Thames valley but just fails to effect a junction. A natural 'pass' is left, through which goes Akeman Street, uniting the two populous districts. Through this bottle-neck must have gone in Roman times nearly all the traffic between the settlements round Irchester, Castor (Durobrivae) and in Lincolnshire in the northeast, and the Cotswolds and Somersetshire in the southwest. Apart from the Foss Way whose course was for some distance laid out through uninhabited forests and which may have fallen early into disuse, there was only one other line of communication open and that was along the Rollright ridgeway. An ancient trackway of prehistoric origin led from Somersetshire across the Avon at or near Bath by Minchinhampton, Syreford, Stow-on-the-Wold and Banbury to Northampton and doubtless beyond. It is thickly set with prehistoric remains, especially of the Iron Age. It crossed the tongue of forest at Adlestrop where that tongue narrows almost to vanishing point. Strangely enough there are no cross-ridge dykes anywhere along it. Perhaps the construction of Akeman Street diverted the traffic. That in later times it was once more the main route from the Cotswolds to Northampton is proved by a curious and interesting reference in a medieval document.[22]

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[21] On the second edition areas of natural woodland have been restored upon a geological basis. Fig. 2 is based upon this map.

[22] It occurs at a point near Adlestrop: 'ad regiam stratam de Norhampton'. The same document describes the hill as 'montem Susibre', a plainly Celtic word representing some such form as *Susobriga. The document was printed by Kemble in *Codex Diplomaticus*, vol. VI, no. 1367 from B.M. Cotton MSS. Vesp. B. XXIV, fol. 63. Dr Grundy, who made the identifications quoted above, regards the charter as probably of not much later date than 1066 (Saxon Charters of Worcestershire, *Trans. Birmingham Arch. Soc.* 1929, vol. LII, pp. 12, 73).

The Pass of Wychwood, as it may be called, is situated between Charlbury and Bladon, a village one mile south of Woodstock. More precisely it lies between Fawler and Bladon bridge, now called Hanborough bridge. It is not, of course, a pass in the usual sense of the term, but the word must do, for lack of a better. It is a passage-way or corridor over a belt of open, unwooded country, bounded by forested claylands on either side. It is a limestone tract consisting

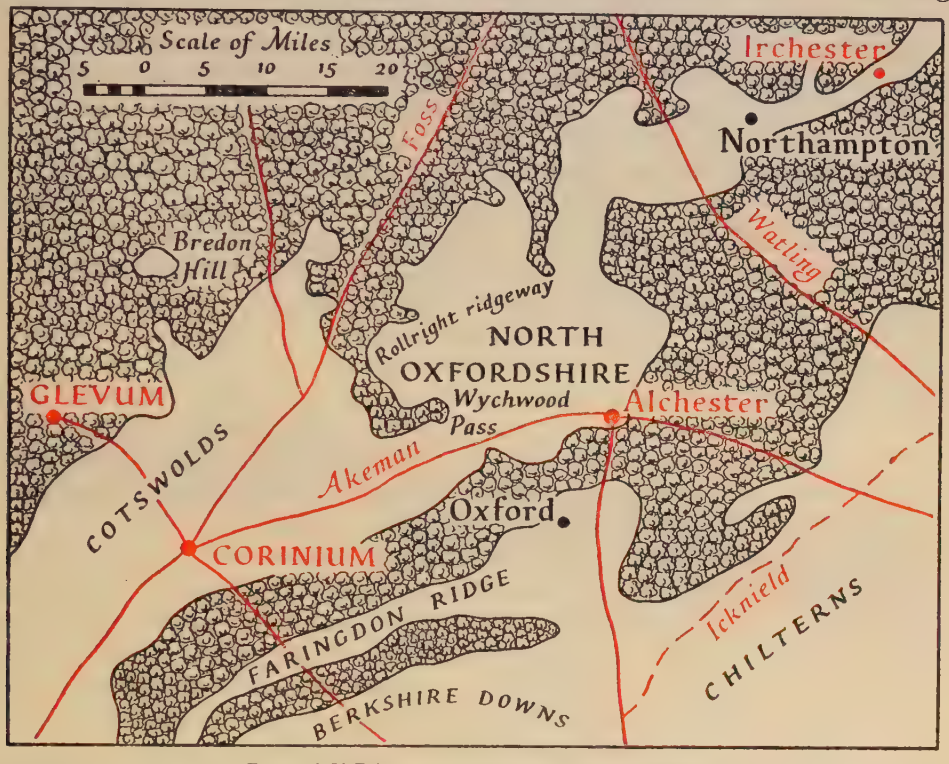

Fig. 2. FOREST GRASS-LANDS IN ROMAN TIMES

geologically of the Great (or Upper) Oolite formation. Its natural vegetation would have been grass and light scrub with occasional trees in open formation without undergrowth. It could never have been densely wooded, and the surface must always have been hard and dry. It was easy country to travel over in primitive times, and must have provided good hunting, good grazing or good arable land, according to the needs of its inhabitants. Not far below the oolite limestones lie the lias clays which come to the surface in Worcestershire and the

midlands. Here the great virgin forest already referred to stretched almost unbroken throughout prehistoric and Roman times (fig. 2). The river Evenlode has eroded the overlying limestone, however, and exposed these lias clays to the surface deep into the heart of the oolite region itself; so that a tongue of liassic clay-forest intruded up to a point just southeast of Charlbury.

Now it will be obvious that, quite apart from the trees, a valley whose sides are of heavy clay is very much more difficult for travellers to negotiate than one whose sides are of hard, dry limestone. Prehistoric tracks will be found to have chosen the limestone portion for their valley-crossing; and even Akeman Street has not been too proud to follow in their footsteps. To be accurate, the exposure of the lias clays narrows southeastwards to a point in the Evenlode valley 3 miles below Charlbury station, and stops at a 'fault' at Ashford Mill, where Akeman Street crosses the valley. From there to Bladon bridge, a distance of $3\frac{1}{4}$ miles in a straight line, the valley sides are formed of oolitic limestone. Below Bladon bridge the river enters a region of Oxford clay, the formation lying next above the Oolite. Actually the band of lias exposed southeast of Charlbury is so narrow that a good crossing could be found almost anywhere between that place and Bladon bridge; but the upper or northwestern reach is the more accessible, for between Akeman Street and the village of Bladon the approach to the valley is masked on the north by an outlying sheet of Oxford clay, covering the Combe plateau. (Fig. 1).

Thus we see that, both tactically and strategically so to speak, the Pass of Wychwood was most important. Tactically it was the best place to cross the Evenlode valley, because there only (with the exception of the Rollright ridgeway) could it be negotiated with undue discomfort. Strategically the Pass was a narrow strip of open downland, constricted between two large forests and uniting two large and populous regions. There was every reason, therefore, to expect that, in time of stress, it would be traversed by wandering bands of raiders. Towards the end of the 4th century we know that raiding parties of Picts and Scots penetrated far south into the heart of civilized Britain, and pillaged and destroyed its country houses or 'villas'. If any such survived into the next century they would have been exposed to similar attacks from the Saxons. A party which had devastated the prosperous Romano–British settlements of North Oxfordshire and Northamptonshire would inevitably gravitate towards the Pass of Wychwood on their way to another rich looting ground in the Cotswolds.

Protective measures would surely have been taken; and the normal procedure of those times was to make just such a defensive frontier as our Grim's ditch. The Britons may have learnt this custom from the Romans, from the example of Hadrian's Wall and the Scottish Wall, whose early name, Graeme's dyke, by the way, is said to be a northern variant of Grim's ditch. The Saxons, however, invented it independently, for Tacitus tells us[23] that the Angrivarii, who lived in the modern province of Hanover on the middle Weser, employed it against Caesar. How the defence of these British dykes was conducted we do not know, nor whether it met with any measure of success. All we do know is that most Roman villas came to a sudden and violent end about A.D. 370. The country was resettled by the Saxons[24] and their more peaceable descendants forgot to record those early struggles. They called these ramparts after Grim amd Woden, and we infer from this that they knew nothing of their origin and purpose. They left to us the fascinating task of unravelling the mystery.

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[23] Tacitus, Annales, book II, chapter 19. Postremo deligunt locum, flumine et sylvis clausum, arcta intus planitie et humida: sylvas quoque profunda palus ambibat, nisi quod latus unum Angrivarii lato aggere extulerant, quo a Cheruscis dirimerentur: hic pedes astitit: equitem propinquis lucis texere, ut ingressis sylvam legionibus a tergo foret. Compare also the *Limes Saxoniae*, an account of which was reviewed in ANTIQUITY, II, 125–6.

[24] Two pagan Saxon cemeteries have recently been found in the Wychwood district, one inside Grim's ditch and one just outside. I am indebted to Mr. E. T. Leeds, V.-P.S.A., Keeper of the Ashmolean Museum, for this information.

The First Monasteries

by E. H. Sawyer

IN the ' Era of Martyrs ' at the end of the third century the persecuted Copts, the Christians of Egypt, suffered death or fled into the desert ; but they found life possible only where there was water. The most favourable of these few oases was Nitria, today called ' Wadi Natrun ' or Valley of Soda, a shallow depression of twenty-two miles by five in the Libyan desert surface. It is situated a camel journey of a day and a half along the ancient track which leaves the Delta near Terenthus, the modern El Tarrana. In it there are eight small lakes, some of whose waters contain soda, others salt. They lie about seventy-five feet below sea-level and are fed not by the Nile, but, as Dr Ball has recently shown, by desert subsoil water flowing from the southwest. Wells dug in their vicinity yield water, brackish but drinkable, and on the shore of one was the town of Nitriotis, the habitation of the soda-workers and glass-blowers, existing since ancient Egyptian times. Now the desert is crossed by a light railway, run by a company that exploits the salt and sodium carbonate.

This depression of ' Wadi Natrun ' was the cradle of Christian monasticism. An ineffectual attempt had been made by Saint Frontonius in A.D. 151 to establish there a brotherhood of hermits living in cells under an abbot ; but the protagonist of the movement which later controlled Europe was Saint Ammon. As a young man he retreated into the desert of Nitria about A.D. 265 and was soon joined by disciples. From that day to this Christian monks have dwelt there. Owing to the extraordinary health-giving properties of the desert he lived to be a hundred, dying in 346. Saint Antony, the most famous of his followers, died at the age of 105. Other disciples of Saint Ammon were Makarius the Egyptian or the Elder, and Makarius the Alexandrian, the Camel-Driver, homonymous contemporaries, the many legends about whom it is no longer always possible to ascribe to the one or the other. The former founded the monastery which is the most interesting of those still extant. By the end of the fourth century Nitria had become so renowned that pilgrims male and female came

to it from all parts of the Christian world and many stayed to partake of the ascetic life.

The slopes of the Wadi are so gentle that there are no cliffs and hence no possibility of a natural or artificial cave, favourite dwelling-place of the hermit. To build his cell he had to quarry rocks from outcrops with a pickaxe and a spade, making the roof with a pile of rushes which are plentiful on the lake edges, a sufficient protection as rainfall is rare. The building took him about a year. The cells were mostly of one apartment, some of two ; a wooden door with a lock was usually fitted. Almost invariably the hermit lived by himself, occasionally entertaining a visitor in search of a ' word ' of wisdom. Most of the time he spent in prayer and contemplation, in mortifying the flesh or fighting the devil—a very real devil who was wont to materialize in human or animal form. But the hermit also worked for his living ; his scanty wants of bread, vegetables, onions, dates and honey he supplied by handicraft. The most common occupation was the weaving of mats and baskets from rushes gathered by the lakes. These he sold at the town of Nitriotis to which traders from Alexandria came with provisions, and at Scetis, a town which later grew up on the southern side in the desert of Scete, from which name, owing to the life led by the hermits, is popularly but erroneously derived the word ' ascetic '. Some spun and wove linen ; many supplied the needs of the others, being bakers and confectioners. Some acted as physicians and surgeons to the rest. A large number went down to the Delta every year to work in the harvesting.

Gradually a number of cells forming a ' Laura ' grouped themselves together round that of a particularly holy man, who became the leader or abbot, and a church was built. Later on, for safety's sake, a high wall was erected round the cells. But to this day the Coptic monasticism differs from its European derivative in that each monk lives by himself in his little house and prepares his own frugal meals. He meets the others daily in the church; and only on feast days after the service is the communal refectory used to eat in. With the continual arrival of neophytes the number of monasteries rapidly grew. Gibbon states that there were 50, the present-day monks speak of 365. The western side of the Wadi is strewn for miles with their ruins ; but only four have survived. Rufinus aptly describes the holy hermits as ' athletes of God '. They were in continuous rivalry to perform feats of self-mortification, in which each strove to hold the record. One fasted absolutely for four days, a second did it for five, a third for

seven. One ate only vegetables, a second ate them only after soaking them in cold water, a third ate them raw, and a fourth went and lived on grass.[1]

Architecturally most interest in the monasteries focuses on the churches; with the exception of underground crypts they are the oldest existing Christian places of worship, and date from the fourth century. Everything in the Nile Valley was destroyed by later invasions, from which their remoteness saved these desert fanes. Not only are they the oldest standing, but they must be among the oldest churches built. Christianity was first practised in the house, then a 'domus dei' was set aside for religious purposes; church building cannot have begun before the time of Constantine (A.D. 325), when persecution ended and the faith gained its freedom.

The pre-Christian domestic style was the model for the first churches, as preserved in early Coptic architecture. We know that the 'alae' of the 'atrium' in a Roman house gave the idea for transepts, but Egyptian houses were different, hence the Coptic churches have no transepts. Style has always been influenced by material and, owing to the scarcity of wood, domestic buildings in Egypt have from the earliest times had brick ceilings domed or of continuous vaulting—a characteristic of these early churches. In them also the sanctuary is divided from the choir, the choir from the nave, by pointed arches. Islam brought no style of its own, houses were designed and built by Christian architects for their Moslem conquerors, and no doubt preserve much of the old form. Hence the 'kaa' or hall of an arab house—for example that of the Bookbinder in Cairo—with its pointed arches and general shape much resembles the interior of a Coptic church. In the Mosque of Ibn Tulun,[2] also in Cairo, which was completed 200 years after the Moslem conquest, we have the earliest instance of a colonnade of pointed arches, and are expressly told that it was designed by a Christian. The pointed arch was introduced to Europe from Syria and Egypt as a result of the Crusades, the first example in England, Bishop Walkelin's transepts at Winchester cathedral, dating some two centuries after the Mosque of Ibn Tulun. In Egypt the early type of Coptic church served as a model for many centuries, in fact until the time of Kyrollos IV. All church exteriors were originally plain walls unadorned, and this too Egypt has maintained.

[1] Rufinus, *Historia Eremitica*, and Palladius, *The Paradise of the Holy Fathers*.
[2] See ANTIQUITY, III, 468–9.

Of all the monasteries that once existed, there are, as has been said, only four remaining in the Wadi Natrun. They follow a general plan of construction, so that the description of one will serve for all. (Plate 1). An illimitable waste of undulating sand hills lightly covered with gravel or rocks, out of which rises a bare wall some 500 feet long by 50 high. Not a sign of life as you approach ; having come over many miles of sterile sun-scorched desert, your conviction is confirmed that no human beings could exist in so desolate a spot. You see a tiny iron-studded door, beside it a rope swinging from a bell at the top of the wall. You toll the bell. Five, ten, fifteen minutes pass, and high above you over the wall appears the head of a monk, who demands your business. On seeing visitors, he quickly disappears and you hear noises from inside, a hunt for the monk in charge of the postern or of the wooden key which he has mislaid. Finally it opens, and a number of monks emerge welcoming you effusively; hospitality to the traveller is one of the chief rules of their order and you will be entertained for as long as you are inclined, and not allowed to pay on departure. A part of the monastic endowment is set aside for this. Not only does the monastery entertain pilgrims, but it extends charity to the stranger and traveller in the desert, irrespective of race or religion. Every few hours the outer bell is rung by Arabs wandering on foot or camping in the neighbourhood. A monk ascends the wall, questions them as to their names and tribe, and presents them with a pound or two of flour and some dried dates let down to them in a basket on a cord. This maintains a spirit of friendliness between the monks and the Beduin of the neighbourhood, whose interest it is to behave well. Any object lost in the desert in a large radius will be brought by them to the monastery.

You present your credentials, a letter from the Patriarch, and enter the monastery. The moment you are inside, the gate is again barred and locked. All these precautions are part of the immemorial custom which has kept the monasteries unharmed in days of disorder. Today the security is perfect, but even in the Great War this desert was none too safe. Outside the entrance you may have noticed an enormous granite mill-stone. In case of alarm this was rolled across the door and the monks were pulled up the outside of the wall by rope and pulley. Until recently some of the Coptic monasteries had no outer gate at all ; the only method of ingress for persons, animals and supplies was by rope and windlass to the top of the wall. This top has a parapet on the outer side only, and from it the monks could defend themselves

by hurling down rocks on Beduin besiegers armed with bows and arrows. The parapet forms a dizzy promenade from which to overlook the monastery. (Plate II).

Inside the walls in an area of from five to eight acres there is a regular little village, with a dwelling-house generally of a lower and an upper room for each monk, who lives alone, sleeps on a mat and prepares his own food. There are three or four chapels, a larger one used in summer and a smaller in winter. A belfry, usually unattached to any church building, summons the monks to prayer at various hours from before dawn to after dark. Here are the only church bells of the Copts, as in all their history they have had to avoid notice in the towns. There is a guest-house, nowadays quite modernly furnished, containing a sitting-room, several bedrooms and a kitchen with a complete canteen, for the use of clerical functionaries and other visitors. There is a refectory with stone table and benches used by the monks on feast days only ; a bakery in which bread is made twice a week ; store-rooms for the supplies of grain, onions, dried dates and olives, salt, etc., doled out to the monks ; a mill of enormous granite stones for flour and olive-oil ; kilns for making lime from the abundant limestone and charcoal from the desert brushwood. The water of the monastery well is often so brackish that it can only be used by means of a ' sakkia ' (water-wheel), to irrigate a small patch of vegetable garden, drinking water having to be brought from a well at some distance. Outhouses contain a few goats and sheep that provide fresh meat at festivals or for guests, a donkey or two, a ' gamus ', buffalo to work the mill and water-wheel, and some chickens. But the most striking feature of the interior is always the ' kasr ', the donjon-tower, a tall isolated square building, whose only entrance is by a draw-bridge and small door on the first floor. Should the rest of the monastery have been captured, it afforded a final place of retreat for the monks. Its interior is a small replica of the monastery : store-rooms on the ground floor, living-rooms and chapels in the upper storeys—one always dedicated to Saint Michael as being nearer heaven and the angels—the library and treasury, and the flat roof overlooking the walls and desert.

A monastery has from twenty to fifty inhabitants, according to its size and wealth. It is ruled by an abbot who is however not always in residence. The larger monasteries may besides have one or two honorary abbots. Several of the chief monks are ordained priests and officiate at the Communion and other services. The monks are assigned

PLATE I

ENTRANCE TO THE MONASTERY OF DAIR ABU MAKAR
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facing p. 320

PLATE II

INSIDE THE MONASTERY OF DAIR ABU MAKAR: IN THE CENTRE THE CHURCH OF THE SHEIKHS, THE BELFRY TO THE LEFT

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GENERAL VIEW OF THE MONASTERY OF DAIR ABU MAKAR, FROM THE WALL
AT THE BACK THE SQUARE DONJON-TOWER; GUEST HOUSE LEFT CENTRE; TO THE RIGHT THE CHURCH OF ABU ISKARUN
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THE CHURCH OF ST. MAKARIUS THE EGYPTIAN
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FRESCOES IN THE CHAPEL OF ST. MICHAEL : IN THE CENTRE ST. MAKARIUS ON HORSEBACK, ON THE RIGHT THE EMPEROR JUSTINIAN. ON THE LEFT THE EMPEROR WASSILIDIS

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THE MONASTERY OF DAIR EL SURIANI, FROM A MILE AWAY

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PLATE VII

THE CHURCH OF THE VIRGIN, DAIR EL SURIANI: CHOIR AND SANCTUARY SEEN FROM THE NAVE

Ph. E. H. Sawyer

PLATE VIII

THE REFECTORY OF THE MONASTERY OF DAIR BARAMUS
Ph. E. H. Sawyer

various duties for longer or shorter periods: one bakes the ordinary and the Eucharistic bread, another tolls the bell, one is in charge of the outer gate, another looks after visitors, and so on. The rougher tasks, such as water-carrying, are performed by novices and lay workers, of whom there are always a few. Each monastery supports itself on property which it has received from pious bequests, possessing in the Nile valley houses and cultivated land managed by the abbot. There it also has a base from which it receives supplies every few months by camel caravan. Abbot, monks and novices are appointed and transferred by the Patriarch, the head of the Coptic Church. The old and infirm are usually sent to monasteries in the Nile valley, and every few years a monk is given several months leave to visit his relations.

The most southerly, most inaccessible but most interesting of the four monastic establishments is the Dair Abu Makar, or monastery of Saint Makarius, founded by Makarius the Egyptian or the Great. He was born in Upper Egypt about A.D. 300, came to Nitria at the age of thirty and built a cell in the desert of Scete, where he was joined by two disciples. After his ordination as priest in 340 many disciples flocked to him, and the foundations of the present monastery were laid. For his opposition to Aryanism he was banished in his old age by the Emperor Valens to the island of Philae in Upper Egypt, but after several years allowed to return to Scete where he died at the age of ninety. By later writers he is often confused with Makarius the Alexandrian, whose love of creatures was so great that for having killed a mosquito he imposed on himself the penance of spending nine months naked in the marshes. A third famous Makarius, 'Abu Makar el Saidi', the Upper Egyptian, was a disciple of Saint Antony.

The monastery of Saint Makarius has played a leading part in the history of the Coptic Church. For centuries without interruption, and frequently up to the present day, the Patriarch has been chosen from among its monks. In 1216 the monastic treasure was betrayed to the Moslem authorities by a renegade monk. At the approach of the troops the treasure, together with the chalice, the paten and the sanctuary veil, was concealed inside the well, but after a rigorous search they were found and taken away. In 1228 the Sultan Melek el Kamel paid a visit to the still famous religious establishments of the Wadi Natrun and was a guest at Saint Makarius. In this monastery (plates I–IV) the largest church, dedicated to the founder, has two circular brick domes, architecturally the finest examples preserved, clearly showing the origin of the later stone mosque-dome. The ancient

woodwork of the interior was unfortunately removed to the museum at Old Cairo.[3] More interesting is the 'kenees̈et el Sheeukh', the church of the Sheikhs or Elders; inside it, in a shrine covered with a pall, are preserved the mummies of the three Makariuses, objects of special veneration. In their day embalming was still customary among the pagans, but Saint Antony inveighed against it as a heathen practice; in any case the dry germ-free desert air would preserve a body without much preparation. In it too are buried forty-nine saints who were martyred outside the gate of the monastery in 1070. Their number was swelled by a fiftieth, a boy who, when he had seen the monks slain, cried, 'I too am a Christian'. The church of Abu Iskharun, basilican in shape, is another architectural gem. The nave and choir are under one brick vault with domed ends. On looking up from below it seems incredible that the vault should maintain itself without any other support than its own weight.

On the second floor of the 'kasr', are several chapels: the one dedicated to Saint Michael contains some very old woodwork, fine frescoes of the seventh century (plate v), and in a wooden chest the mummies of a number of the abbots dating from the tenth century. In two other chapels there are frescoes, one of 'Abu Nafr el Saih', obviously representing Saint Makarius the Alexandrian, clad only in his beard before he went into the marshes. The top of the tower looks out over the walls on an undulating desolation of sand. Close to Abu Makar on the west are the ruins of three other monasteries; and half a mile to the northeast lie the scanty remains of the town formerly known as Scetis, later as Abu Nafr.

Eight miles away to the west stand two other still inhabited monasteries, within a mile of each other, Dair el Suriani and Dair Anba Bishoi. These, being five miles to the south across the lakes from the site of Nitriotis, where the station of the light railway now is, are the most frequently visited and best known. The Dair el Suriani, or monastery of the Syrian (plate vi), said to resemble Noah's ark in shape, was founded by Saint John the Syrian, traditionally at the beginning of the fifth century. His most famous disciple was 'Anba Ifrahim', Saint Ephraim. The older monks during their hours of standing in the church lean against the wall at their back and prop themselves in front with an 'ukas', or crutch. The abbot finding young Ephraim with a crutch admonished him and cuffed him on the

[3] It was replaced in the autumn of 1929.

back of the neck. The blow drove the crutch into the ground, where it sprouted and is to-day pointed out by the monks as a great tree, the sacred tree of Saint Ephraim ; a room has been built round the trunk. In the fertile Egyptian climate this is not such a miracle as may appear ; many a garden prop, if still green, will take root and flourish. The ' kasr ' is the finest and largest of any monastery, as is also the ' keneeset el Adra ', or Church of the Virgin, being ninety feet in length ; its choir is roofed with a dome supported by half-domes on each side. The sanctuary is shut off by a wooden screen and doors, containing beautiful carved panels of about the sixth century, inlaid with ivory, the upper row containing figures in the shape of ikons. (Plate VII). In another lesser church of Saint Mary there is a fine old painting of the Virgin. Old paintings are rarer than might be expected, nothing pre-medieval exists except frescoes. A fear of ikon-worship has always been entertained and large numbers of old pictures were burnt in the Middle Ages by order of a patriarch.

It was in this monastery that a wonderful treasure of over one thousand Syriac manuscripts was found by the Duke of Northumberland and Dr Linant ; some were brought away by Curzon, afterwards Lord Zouche, in 1833, the others by Dr Tatham, and are now in the British Museum. Owing to its name and tradition there has always been intercourse between Dair el Suriani and Syria, and Syrians were among its monks until eighty years ago, when, after a dispute between the Coptic and Syrian Churches, all Syrians were sent away from Egypt. The Abyssinian Church being an offshoot of the Coptic, there are still occasional Abyssinians in Egyptian monasteries.

The adjacent Dair Anba Bishoi is said to have been built about 364 by Saint Pshoi, after whom the largest church is named. The lofty pointed arches of its nave, aisles and choir have had to be partially or entirely built up to support the roof. In the centre of the nave in the stone floor there is a small marble basin for washing feet, for it was formerly the custom that pilgrims should be met outside the monastery by monks in procession singing psalms. The monks led them to the church, ceremonially washed their feet and held a special service of thanksgiving for their safe deliverance from the dangers of the desert. The nave is roofed with a pointed-arch vaulting, and the choir, separated from it by doors, is transversely vaulted. In the latter, to the left of the sanctuary, stands an ancient wooden shrine, with a coffin containing the remains of Saint Pshoi. Formerly there was at the side of the coffin a hole, through which pilgrims could touch the relics in order

to be healed of sickness. But later, at the order of an iconoclastic patriarch, the hole was closed up and from this the following modern legend has since arisen. ' A noble English lord and his lady once came to the monastery of Anba Bishoi on a pilgrimage, and a special service was held for them in the church. When the noble lady approached the shrine, Saint Pshoi, as his custom was with all good Christians, put his hand out of the coffin and shook hers most affably. But the lord, who was atheistic at heart, approached in vain, the saint refused to give him even a finger ; at which the lord was so struck with grief and anger that he fell down dead on the spot. In consequence the patriarch forbade Saint Pshoi to put his hand out any more, and to make doubly sure had the hole in the wood nailed up '.

Five miles further out in the desert to the northwest stands Dair Baramus, the last of the remaining monasteries. It is also known as the Dair el Seyyida el Adra, the monastery of the Blessed Virgin. The name ' Baramus ' is derived from ' Para-Musa ', signifying the ' Place of Moses '—that is, of the monastery of Moses the Black, the ruins of which lie just outside the walls. This Anba Musa el Iswid is one of the most romantic figures of the monastic movement. His cognomen implies that he was a Sudanese, or more probably an Abyssinian. Originally the slave of a nobleman, he was expelled from his master's house for theft and general wrong-doing. Large and strong of stature, he then became the captain of a band of seventy brigands, who lived by stealing sheep and even committed murder. Frequenting uninhabited wastes he came into contact with hermits, learnt from them the new truth, was converted, repented of his ill-deeds and fled to Nitria. There he met and became a disciple of Isidore the priest and archimandrite of Dair Abu Makar, successor of Saint Makarius the Egyptian. He built himself a cell and during the rest of his life we find him much troubled by devils and frequently appealing to Isidore for assistance against them. Finally he founded the Dair Anba Moosa el Iswid. Even the end of his life was tragic for he fell at the door of his cell by the sword of a brigand.

The district from Dair el Suriani to Dair Baramus is that of the ' Cells ', where Saint Makarius the Alexandrian was abbot ; in the latter monastery the church of El Seyyida el Adra, the Blessed Virgin, is stated to have built by him about 350, and to be the oldest church in the Wadi Natrun. In it lie buried Moses the Black and Isidore the priest mentioned above. It is constructed in the usual style of the oldest churches, the pointed arch between nave and choir being

afterwards built up with piers. It has three wooden screens, one across the nave, the other before the choir, and the third entirely shutting off the sanctuary; the panels of the last are singularly beautiful. The church contains some 14th century paintings representing Maximius and Domadius, sons of the Emperor Valentinian, who were monks or pilgrims here about 400. There used to be two other old churches, of Anba Bulos and Anba Abib, which were unfortunately restored about fifty years ago and turned into one, now dedicated to Yuhanna el Maamidan. It copies a Greek church, the antique stamp is entirely gone and the screen gaudily painted with imitation graining and carving is a poor contrast to the genuine article.

But evidently as old as the foundation of the monastery, and its most interesting building, is the refectory adjoining the church of the Virgin; a rough domed vault, it is lit only by two unglazed apertures in the roof. (Plate VIII). Its one entrance is direct from the church, from which the monks repaired to it after the main service on feast-days and sat on stone benches down the two sides of a stone table. Table-clothes were unknown luxuries; the surface of the table is in the form of a trough and filled with sand, which can easily be changed when dirty. Dishes of food were passed from the kitchen through a hatch in the end wall, an ancient example of a modern convenience. At the end of the refectory there is a stone lectern, coeval with the room, at which one of the monks reads from the Bible to the others when eating.

Dair Baramus, the largest in the Wadi Natrun, has a large vegetable-garden watered by a shallow well impregnated with soda; whilst an artesian well 100 feet in depth gives drinking water. There is a considerable trellis of vines, the grapes of which are eaten; the sacramental wine, ' abarki ', being made in all monasteries out of black Syrian raisins. The holy bread, ' kudus Allah ', the consecrated of God, is baked at the monastery and each monk receives at the Eucharist one loaf, which retains its spiritual power for three hours. On it are crosses representing Christ and the twelve apostles, and punctures for the nails and the spear-wound of the Cross. This monastery has a non-resident bishop and about fifty monks.

In the desert away to the west of Dair Baramus lies a petrified forest, where the broken-up stems of the trees attain a length of up to 80 feet. There is a legend, unfortunately geologically impossible, that the Wadi Natrun was once a branch of the Mediterranean Sea infested by pirates who harried the monasteries; but that during a raid Saint

Makarius turned the ships and men to stone, hence the abundance of silicified wood. The monks even relate that at a certain place out in the desert can be seen a pirate galley with its fighting men and rowers on their benches, all intact and petrified.

Such was the nature of the place and of the men among whom and through whom the great monastic movement had its inception; and such are the places and the men who today uphold the cult in its cradle. It made a further advance in Upper Egypt, where Pachomius of Tabenna, who began his religious career as a monk of the ' Cells ', founded a number of monasteries, and regulated monasticism into a strict code. This was introduced into Europe; it was amplified and amended, and from it arose that spiritual society which, under a temporal Pope, ruled Europe until the Reformation.

Fresh Light on the Stone Ages in Southeast India

by L. A. Cammiade and M. C. Burkitt

THE first Indian Palaeolithic stone implement was found more than 60 years ago in a ballast pit at Pallavaram, a little to the west of the Madras–Trichinopoly road. Since then a large number of stone tools belonging to various prehistoric cultures have been discovered by several keen archaeologists, among whom Bruce Foote[1] deserves special mention.

During the last fifteen years or so, however, little has been published from the southeast of the Peninsula, archaeological attention having been more specially focussed on the unsuspected Sumerian-like discoveries in the north. Nevertheless, both in Southeast India and in Africa, fresh information has been collected which is very important for the elucidation of the origins and movements of prehistoric cultures.

In the course of service under the Government of India one of us (L.A.C.) has had to tour along the Eastern Ghats, which run parallel to the eastern seaboard of India for a distance of over 300 miles. The country is wild and sparsely inhabited. This wildness has been a blessing from the point of view of the prehistorian ; the soil has hardly been disturbed by cultivation, and valuable prehistoric sites have remained intact which in the more civilized parts of India would have been ploughed up and destroyed centuries ago. The region has yielded a large number of stone implements which on stratigraphical and typological grounds, as well as from a study of their state of preservation, can be grouped into four series belonging to four distinct cultures of different date.

1 The earliest industries are characterized chiefly by the presence of hand-axes made of quartzite. There are various types present, and they can be closely paralleled among similar finds in Africa.

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[1] Robert Bruce Foote was for some time Superintendent of the Geological Survey of India.

2 Next are found flake industries with some much more neatly made hand-axes. The material employed is chiefly quartzite, but sandstone and chalcedony are also used.

3 Industries of the third series are characterized by the presence of slender blades with blunted backs, a few burins, planing tools and end-scrapers. The material used for such implements is often of a flinty nature such as Lydian stone.

4 Lastly, microlithic industries occur, pigmy tools vastly outnumbering all implements of normal size. The average length of the tools is about $\frac{3}{4}$ inch. The materials used are chiefly agate and quartzite.

It must be noted at once that, except in the case of the earliest series, industries are seldom found unmixed with members from the other series. Thus the flake industries will almost always yield a few examples from the earliest series and occasionally one or two tools that clearly should be grouped with series 3. Again industries belonging to series 3 nearly always contain specimens of series 2; but no examples of the hand-axes of series 1 have ever been discovered.

A study of the stone implements and, with them, of the climatic changes that have taken place in this area in the past is to a large extent bound up with the question of the origin of laterite,[2] a widely occurring geological formation.

Laterite is produced by the weathering of many different kinds of rocks such as gneiss, basalt, granite, etc. As a result of the percolation of surface waters carrying in solution atmospheric gases (carbon dioxide, etc.) the felspars and allied minerals of these rocks at first become converted into aggregates of sericite, kaolin, quartz or calcite, while the ferro-magnesian minerals give chlorite, serpentine and talc, with separation of iron oxides. Glassy rocks become devitrified and stony. Prolonged weathering of this nature causes the rocks to lose their alkalis, their lime, and some of their silica and iron, and the final result, laterite, is a decayed clayey mass, consisting largely of hydrated silicate of alumina and iron. It is obvious then that the formation of laterite can only take place where there is a very considerable rainfall, and, in fact, it is only in the tropics and even then in

[2] In this connexion see such writers as :—P. Lake, *The Geology of South Malabar between the Beypore and Ponnani Rivers*, Mem. G.S.I. XXIV, pt. 3, 1890; Malcolm Maclaren, *On the Origin of Certain Laterites*, Geol. Mag. 1906, p. 536; F. P. Mennell, *Notes on Rhodesian Laterite*, Geol. Mag., 1909, p. 350.

areas of especially heavy rainfall that such rocks have, in general, yielded laterite. Further, as its occurrence is restricted to horizontal or gently sloping surfaces it would appear that water-logging of the soil is an important condition for its formation. But water-logging by itself produces no laterite ; it seems essential that there should be an alternation of perfectly distinct wet and dry seasons such as those which today succeed one another along the Malabar coast of west India, where over 80 inches of rain falls within the months of June, July and August, but none at all during December, January and February. In Southeast India today no laterite is being formed, but the presence of extensive deposits of this material indicates that in the past climatic conditions must have been such as at present occur in Malabar. As laterite is a rock of slow formation, this pluvial period must have been very protracted, and while it lasted dense tropical forests similar to those of Malabar and Ceylon must have existed along the east coast.

Mankind does not seem to have inhabited the southeast area during this period. Probably the presence of the dense forests deterred him. Throughout prehistoric times he seems to have preferred the open country, and this for obvious reasons. But after the formation of the laterite a dry period seems to have set in, in the southeast of the peninsula, causing the breaking up and weathering of the upper part of the laterite previously formed. It is in this decayed laterite, either *in situ* or washed down and re-deposited, that implements of the earliest series occur ; and so it would seem that during this dry period, the surroundings having become more congenial, the first inhabitants of the district lived on the laterite. Further the evidence seems to suggest that this washing down and re-deposition of the weathered laterite was due to the setting in of a second damp period, which in its turn was followed by a second dry period and a third of greater humidity. The sequence can be briefly tabulated as follows:—

1 A long damp period marked by the formations of laterite on the east coast of India between the rivers Kistna and Palar. No human relics can be referred to this period.

2 A long dry period, when the swamps and forests of the laterite period gave place to large open plains. The makers of the hand-axes, etc., of series 1 settled ubiquitously on these plains.

3 A period of violent rain, which swept down shingles from ancient marine formations, the débris of laterite rock that had weathered and accumulated during the dry period, and the relics left by the early

settlers. Much of this material was not swept into river channels or deposited as river gravels, but was carried straight down and deposited in shallow beds devoid of stratification. With the formation of these detrital beds the hand-axe culture (series 1) of Southern India, which had been flourishing, came to a sudden end, and the country seems to have been largely depopulated.

4 A second dry period, during which a sparse population settled on the newly formed beds of detrital laterite and clays. Although some hand-axes survive, the new population used flakes and industries of series 2.

5 The climate again became humid, but this wet period differs in character from periods 1 and 3 in that no laterite was formed nor was the rain-wash violent, though it appears to have been heavier than it is today. The rivers deposited alluvium in which flake industries of series 2 occur.

6 and 7 Lastly some evidence seems to suggest a decrease in the rainfall followed by a period of denudation, leading up to present conditions. Industries belonging to the third and fourth (last) series are associated with these periods.

This climatic table is based on observations made at a large number of sites and, from among these, some five have been selected for description here to demonstrate the sequence of the four cultures and to illustrate the climatic changes that have just been described.

The first of these sites is in the Bhavanasi gravels (plate 1), where rolled implements of drift type (series 1) occur in an ancient pebble bed, the materials of which have been derived from under an almost vanished laterite plain of denudation. An industry of series 2 is found in the alluvium above the pebble bed. A good section is in the cliffs on the banks of the Bhavanasi, opposite the village of Krishnapuram at the western entrance of the Dornala–Atmakur pass across the Nalla Malai Mountains. It has been recorded as follows:—

1	Sticky brown clay	14 to 16 ft.	
2	Red alluvial clay		
3	Pebble bed	3 ins. to 4 ft.	Average 15 ins.
4	Broken shale	10 to 12 ft.	
5	Sound shale		

The implements, which belong to series 1, were found among the pebbles of layer 3, and were therefore derived from the same

area as the pebbles themselves, as may be further proved from the following considerations :—

a The implements have been stained by laterite to the same deep colour as the pebbles, and as there is no laterite on the hill slopes (and there never was any, as laterite only forms on level ground) the implements did not come from the slopes.

b The implements in the pebble bed have not been subjected to much rolling, and so have not travelled far. They have not, therefore, been washed down from the top of the hills, where laterite beds do occur containing implements of drift type, as they would have been battered about in the process.

c Implements of similar type are to be found on the shingle around Krishnapuram, and a laterite bed about 6 feet deep overlies the pebble bed at Siddapuram, about three miles above Krishnapuram. This laterite formation was once far more extensive, and a good deal of it has been washed away. It was probably on this laterite formation that Lower Palaeolithic man lived, and it, together with the underlying shingle, was washed down and re-deposited during the wet period (period 3 of the climatic table) to become the pebble bed of layer 3.

The implements found today in the pebble bed must have been buried for a prolonged period—as they have been deeply stained—before they were washed out and carried down by the flood waters during period 3. After this the red clay was deposited,[3] and this contains flakes belonging to series 2 which show little or none of the laterite staining so typical of the implements from the pebble bed below. Both the pebble bed and the overlying red clay must have been laid down under damp conditions, damper than those obtaining today. The overlying brown alluvial clay would also have required a damp period for its formation, but between the brown and the red clays there is an unconformity, indicating that a considerable time elapsed before the brown clay was deposited on the red. It is probable, then, that between the deposition of these two clays a much dryer period intervened (period 4 of the climatic table).

[3] The red colour is probably due to the underlying laterite. There is no evidence to show whether or not a dry period occurred between the formation of the red clay and the underlying beds of re-deposited laterite. On the whole it would seem wiser, until further work has been undertaken in the region, to assume that the deposition of the red clay was due to the setting in of less violent conditions towards the end of period 3.

The implements from the pebble beds include roughly-made *coups de poing* (hand-axes). They are made of quartzite, and some of them have pellets of laterite still adhering to them. They are rolled, but not to an undue extent. As is necessarily the case with quartzite implements, they present on the whole a rough appearance. They have clearly been made from pebbles, portions of which in many cases remain untrimmed at the butt ends. The flaking is bold, and the edges are irregular. Plate I, nos. 6, 7, 8, are typical examples. No. 5 is an interesting example of a type recalling the rostro-carinate, there being a flat ventral plane, produced by the removal of a flake, from which rises a keel which ends in a dorsal platform formed by part of the original surface of the pebble (fig. I, 3). A somewhat similar specimen, larger in size however, was found far away at Chodavaram (plate I, no. II and fig. I, 2). A gigantic example of almost exactly the same type was found in Nigeria and can be seen in the University Museum of Archaeology and Ethnology at Cambridge (fig. I, I). Plate I, I, is also of great importance. It is the type of tool which was first recognized at Victoria West in South Africa.[4] Pointed at one end, the under surface is almost entirely formed by the removal of a great plunging flake, the remainder of the under surface showing bold trimming. Fig. II, nos. I and 3, illustrate the Indian specimen and an example from Victoria West. The occurrence of the Victoria West type of tool in Southeast India is of extreme importance. As in India, so in South Africa it is found associated with *coups de poing* (hand-axes), but in South Africa it seems to be more particularly connected with the use of dolerite as a tool-making material. Although principally found in the Union of South Africa, this type of tool will probably turn out to have a wider distribution. In South Africa it would seem that, though Lower Palaeolithic in date, it is connected with the first appearance of flake industries.

The industries (series 2) from the red clay[5] are represented by a number of flakes ; one is green in colour, has a faceted striking platform, and is completely unweathered ; two others are slightly stained by laterite but the edges are still sharp ; the one has a prepared striking platform, the other has not (plate I, nos. 2, 3, 4).

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[4] See M. C. Burkitt, *South Africa's Past in Stone and Paint*. Cambridge Press, 1928, p. 55 et seq.

[5] It is possible that one or two flakes also occurred in the overlying brown clay.

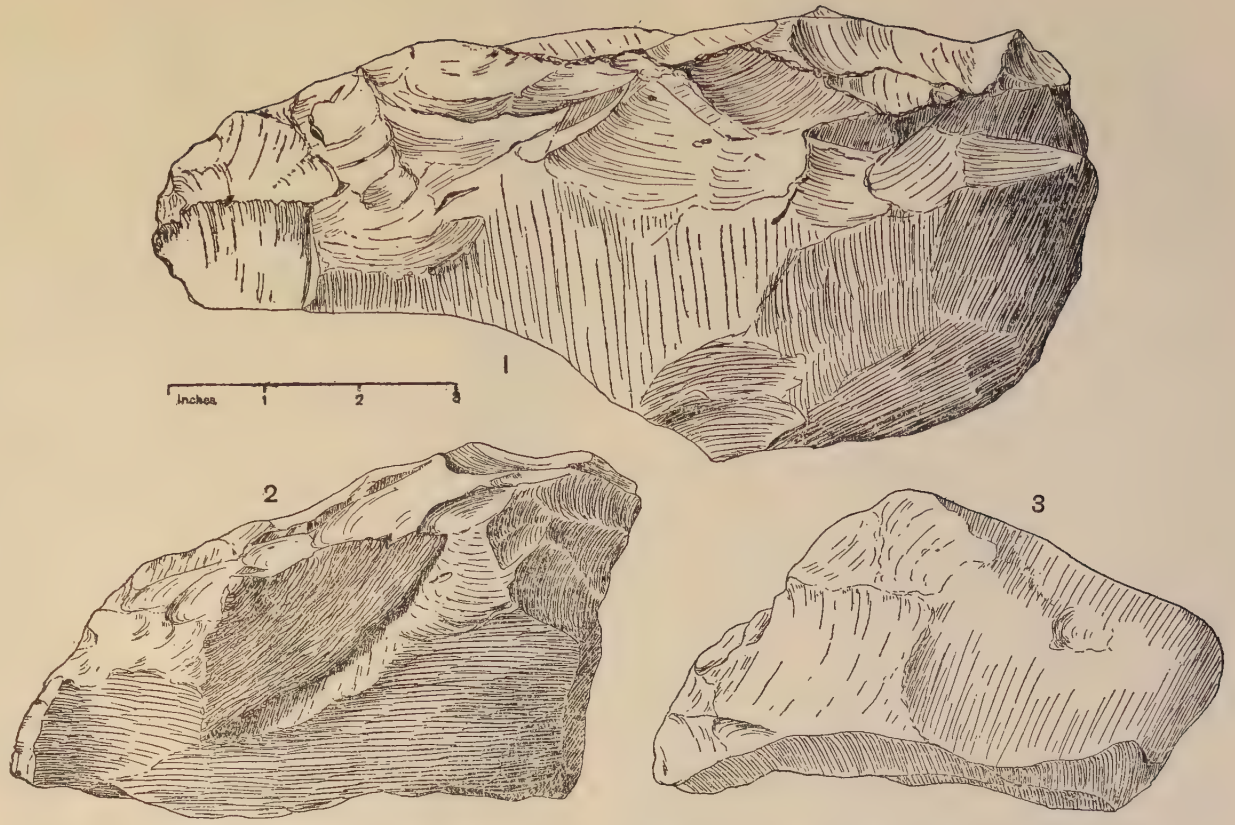

FIG. 1. ROSTRO-CARINATE TYPES FROM—1, NORTHERN NIGERIA; 2, CHODAVARAM; 3, BHAVANASI GRAVELS

ANTIQUITY

As a proof of the great antiquity of some of these Southeast Indian implements, a site near the village of Yerra-Konda-Palem, near the eastern entrance of the Dornala–Atmakur Pass across the Nalla–Malai Mountains, is interesting. It shows the conditions which existed at the eastern or seaward side of the hills, just as Krishnapuram demonstrates the conditions on the western side. The site is in a plain or flat valley about a mile wide, and is flanked on both sides by hills. A small river, Ralla Vagu, a tributary of the Gundlakama, flows down the valley. During some renovations to the embankment of an irrigation canal some water escaped and eroded a few short gullies about 6 to 10 feet in depth, exposing the bedrock for a length of about 100 feet. On the sides of one of the gullies, and almost at the bottom, some implements were found *in situ* firmly embedded with other stones (plate 1, nos. 9–10). The following section was observed :

1 Silt
2 Pebble bed of small pieces of quartzite and sandstone
3 Silt
4 Pebble bed of small pieces of quartzite and sandstone
5 Silt
6 Derived quartzite pebble bed, containing the tools
7 Quartzite bed

Clearly several climatic changes have supervened since the implements were there deposited ! Elsewhere, a mile or two away on the hillsides, flake industries, in part at any rate belonging to series 2, were found, but their relationship to the older tools could not be determined.

Another site of considerable interest is at Gundla–Bhramhesvaram, a little to the south of the River Kistna. Implements (plate 11) occur in weathered laterite under forest soil in a high mountain valley, and once again there is evidence that a hand-axe industry was followed by one of flakes. The section is as follows :—

1	Bamboo forest	
2	Forest soil	2 ft.
3	Ashy beds	1 ft.
4	Laterite	4 ft.
5	Gneiss	

As the site is in a high mountain valley there are few complicating factors, the implements cannot have been drifted in from elsewhere, and the laterite spread is necessarily of local origin. The configuration

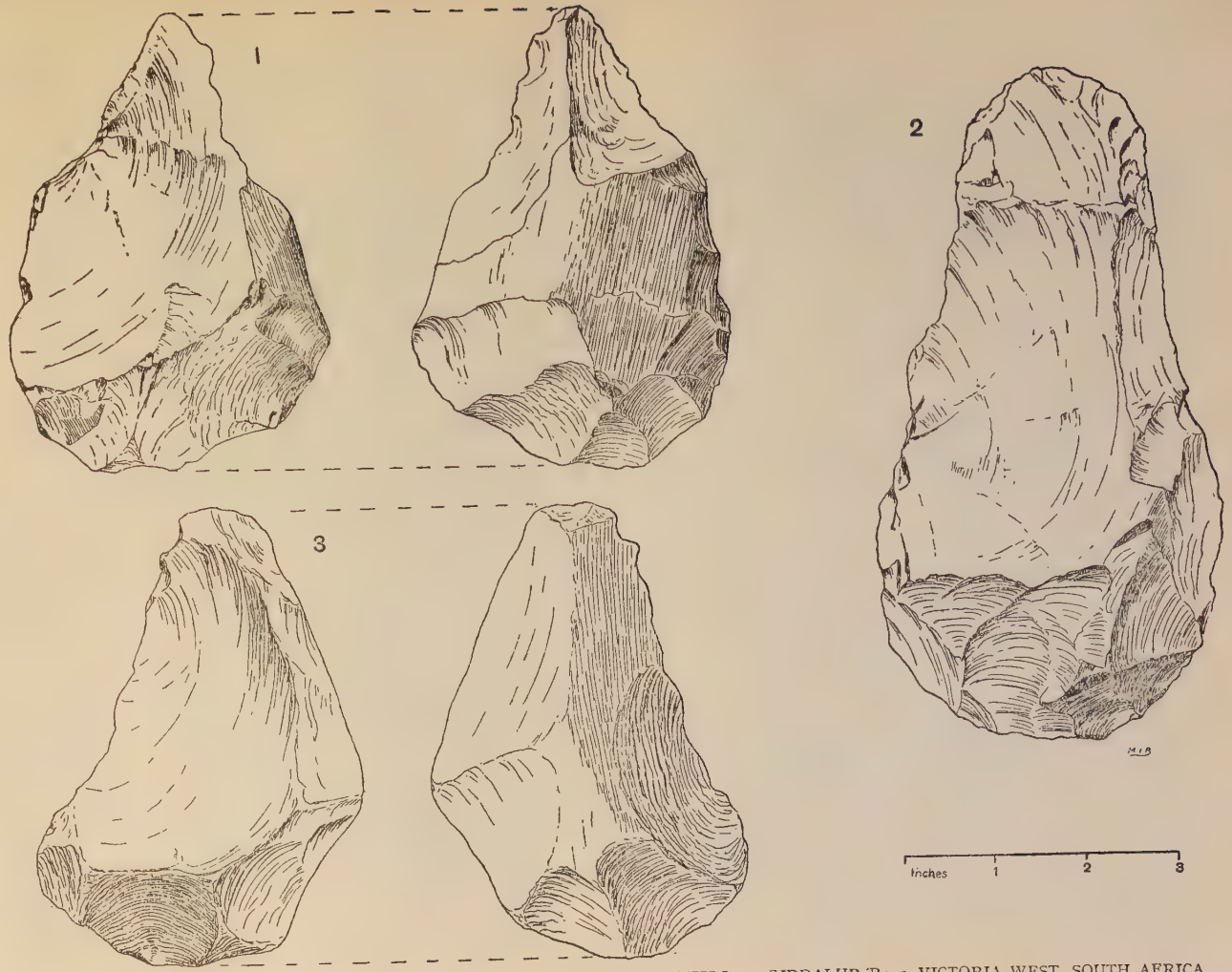

FIG. 2. TOOLS OF THE VICTORIA WEST TYPE FROM—1, BHAVANASI GRAVELS; 2, GIDDALUR 'B'; 3, VICTORIA WEST, SOUTH AFRICA

of the valley seems to have undergone no appreciable change since the time when the hand-axe makers settled there. From the upper part of the laterite a number of *coups de poing* (hand-axes) have been found. They are deeply stained ; one of them is thin, sub-triangular in shape, with straight edges, and in Europe would be classed as late Acheulean or even early Mousterian in date (plate II, no. 12). Another is of more ovate form (plate II, no. 11). From the overlying ashy bed a number of long flakes have been collected, showing far less stain. Some have prepared striking platforms, others have not. Small discs also occur (plate II, nos. 1 to 7). Plate II, nos. 6, 8 and 9, are of particular interest. The first of these is a small flake with a faceted striking platform, the upper surface being formed by long parallel flake scars. No. 9 is a double-ended burin of a very Upper Palaeolithic appearance (fig. III, no. 4). No. 8 is also a small burin, though less typical. While no. 6 is of quartzite and may belong to series 2 already described, nos. 8 and 9 are made of cherty material and it seems probable that there has been an admixture with examples of series 3, to which typologically they undoubtedly belong.[6]

Several other important sites occur near Giddalur (plates III and IV), a town near the Nandi–Kanama Pass. Its elevation is 700 feet above the sea, and the river Sagileru flows past the town. In Palaeolithic times conditions along the banks of the river must have been very pleasant, judging by the number of stone implements to be found there. The section at the first site, Giddalur A, consists of an almost vertical bank of shale, overlain by derived laterite, the age of which is probably equivalent to that of the pebble bed at Bhavanasi. Tools belonging to series 1 and 2 were there collected, but these can be separated on grounds of state of preservation and type. The flake types, which include discs, are always less weathered than the *coups de poing* (hand-axes). Giddalur B is very similar. Tools from Giddalur C occur under a more recent black clay in the valley itself, and have a fresher appearance ; typologically, however, they seem to belong to the end of series 1 and the beginning of series 2. Once again we notice at the Giddalur sites the occurrence of the Victoria West technique among examples

[6] A stone tool (plate II, no. 10), a sort of coarse rubbing tool or plane, and from its state of preservation probably belonging to series 2, was found on the top of the mountains thereby. Today these Nala Malas are but sparsely inhabited owing to the thick bamboo forests and the presence of this implement is but another indication that a dry period probably existed there formerly.

PLATE I

Nos. 1–8. STONE IMPLEMENTS FROM THE BHAVANASI GRAVELS
1, 5, 6, 7, 8 ARE EXAMPLES OF SERIES I AND 2, 3, 4, OF SERIES II;
9 AND 10 FROM YERRA-KONDA-PALEM; 11 FROM CHODAVARAM

facing p. 336

Nos. 1–9 and 11–13, STONE IMPLEMENTS FROM GUNDLA-BHRAMESHVARAM
(11–12, series I; 1–7, series II; 8 and 9 burins, perhaps series III)
No. 10, A COARSE RUBBING TOOL, A SURFACE FIND FROM THE TOP OF THE MOUNTAINS IN THE VICINITY

PLATE II

PLATE III

INDUSTRY FROM A SITE NEAR GIDDALUR, COMPRISED OF SERIES I AND II TOOLS

PLATE IV

TOOLS FROM SITES NEAR GIDDALUR

PLATE V

IMPLEMENTS ILLUSTRATING SERIES III FROM THE EASTERN AND WESTERN ENDS OF THE NANDI–KANAMA PASS

No. 12 is a coarse burin on the end of a long flake

A B

A. SMALLER TOOLS FROM THE NANDI–KANAMA PASS, BELONGING TO SERIES III

B. PIGMY IMPLEMENTS FROM THE GODAVARI RIVER, TYPICAL OF SERIES IV
Note, in the bottom row, a small polished Burmese type of chisel found with this series

FIG. 3. 1, 2, 3, CLEAVERS FROM S. RHODESIA, TABELBALA, N. AFRICA, AND GIDDALUR A, 4 AND 5, BURINS FROM GUNDLA-BHRAMHESVARAM AND THE NANDI-KANAMA PASS

of the older series (plate IV, no. 9 and fig. II, no. 2) and also the type represented on plate I, no. 5. Plates III and IV illustrate a series from these sites, and fig. III shows the exact similarity of a cleaver from Giddalur A (3) with examples from S. Rhodesia (1) and Tabelbala, Oran, North Africa (2). The occurrence of the square-ended type of *coup de poing*, which also occurs in Africa, may be observed as well as a sort of Micoque-like type of *coup de poing* made on a flake.

Sites where series 3 were best found are at the eastern and western end of the Nandi–Kanama Pass.[7] Banked against the sides of the valley there were deposits of red clay overlain by red sandy soil. The implements (plates V and VI, a) occur on the surface of the red clay. A few of them, judging by their state of preservation, would at first sight seem to belong to series 2,[8] but a number of knife blades, made from black Lydian (?) stone and showing fine blunting down the backs, occur. There were also a number of core-scrapers and burins, the latter recalling the technique of core-scrapers, but made on the thickness of a flake ; they almost all seem to belong to the gouge type. Small crescents, also made from fine-grained rock, occur, and these perhaps link the series 3 industries with those of series 4. A large number of the latter were found on the surface of the ground near the Godavari river (plate VI, b). They form a rather monotonous series of small pigmy tools including crescents, knife-blades, triangles, flakes, cores, core-scrapers, etc., which recall the pigmy finds from the Banda and Vindhya Hills. Some larger tools also occur. The finding of a small celt of Burmese type (plate VI, b, bottom row), near the Godavari river with tools of series 4 is of very great interest, if indeed it is contemporary. Whereas industries of series 3 are numerically poor, especially when admixtures from series 2 and series 4 are eliminated, those of series 4 itself are very rich. In many ways they are closely allied to the industries of the Wilton culture of South Africa, which have also been found in Kenya and Uganda. It would seem, then, that whereas industries of Upper Palaeolithic type and probably made by folk of Upper Palaeolithic stock, occur in South Africa, are common in North and East Africa, and are found as far northeast as Transjordania, they are distinctly rare in Southeast India, and we seem to be

[7] Much exploration has still to be undertaken in cave sites. Bruce Foote mentions bone objects associated with fauna from the Billa Surgam caves in the Kurnool district,

[8] Among these, however, was found a coarse burin on a long flake (plate V, no. 12 and fig. III, no. 5).

on the periphery of the Upper Palaeolithic civilization. The pigmy tools of series 4, on the contrary, link up with the Wilton culture and probably form a not unimportant part of the great Mesolithic spread of cultures.

Throughout this article the reader will have noticed that all the series of industries mentioned have exact counterparts in Africa, especially in South Africa. It becomes obvious that close connexion existed in those days between the two areas. The succession of climatic changes is also very important, and can be correlated in general with those that are being worked out by Leakey and Solomon in Kenya. Naturally regional conditions have to be taken into account, but the succession of pluvial and dry periods, starting with early Palaeolithic Man and continuing to Mesolithic times, are strikingly similar in these two widely separated regions.

It has only been possible here to outline the new knowledge and the evidence on which it is based. What is needed now is a small, well-equipped expedition to re-examine the whole problem in the Peninsula of India in the light of recent discoveries in various parts of Africa.

Concerning Orientation

by George Engleheart

IF the possessor of a set of *Archaeologia* will open volume 25, for 1834, he will find over 40 pages, with many admirably drawn plans and plates, explaining some of the chief megalithic structures in England and Brittany as *Dracontia*, or temples of serpent-worship, a name and attribution which had originated with Stukeley a century earlier. This is but one example of the fantasies of the antiquaries of those times. We should, however, be slow to ridicule those old inquirers; they lacked our *nova organa* of excavation and comparison, the eyes and brain of modern archaeological science; though it is difficult to understand why they abandoned in these studies the sounder reasoning which served them in every-day affairs.

The axiom will not be disputed that the Science of today holds nothing as proved or probable which would not be held as such in a court of law. And yet, if the same reader will advance a century, from volume 25 of *Archaeologia* to volume 73, he will find an article propounding at length, again with many exquisitely drawn plans, a theory of the same structures which must equally fail by the test of this axiom—a theory similarly based on unverifiable initial assumptions and similarly buttressed by unsound inference. It is, in brief, that the builders *intentionally* directed the median line or 'axis' of these monuments to some sunrise or sunset point, or to the rising point of some star on the horizon. It will also be found repeated in condensed form in Antiquity for March 1927.

In these articles the introductory statements are made that 'the occurrence of orientation in prehistoric structures has long been noticed'; that 'many observers have noted the *fact* of orientation'. It might rather be asserted that an unsupported conjecture of some centuries ago has been constantly reiterated without scientific examination, and a saying of Sir Richard Colt Hoare here comes to mind: 'One man adopts a system or hypothesis, and another follows him, not examining the grounds on which the foundation was laid, so much easier is it to follow than to take the trouble of inquiring'.[1]

[1] *Modern Wilts, Hundred of Branch and Dole*, pref. p. 6.

This theory of designed orientation has passed widely as incontrovertible fact; it is affirmed, for example, in almost every book, pamphlet or article on Stonehenge. It has its roots in the attribution of these monuments to sun-worship by the antiquaries of the 17th and 18th centuries, to whose undisciplined imagination any such quasi-religious mysticism appealed. Dr John Smith in 1770 declared that the Hele Stone of Stonehenge ' indicates the sun's greatest amplitude at the summer solstice '. Sir Norman Lockyer in 1901 demonstrated by elaborate calculations that the central line of the Stonehenge Avenue is a prolongation of the axis of the building, intentionally and accurately directed to the midsummer sunrise. He lost credit by fantastic extensions of his belief to prehistoric remains at large, and his designation of Stonehenge as a solar temple has failed of acceptance by serious authorities. Archaeology abhors an unrelated instance as Nature abhors a vacuum, and it was argued fifty years ago by that acute reasoner W. C. Lukis that ' had rude stone temples existed in Europe, buildings erected for religious worship which might clearly be distinguished from Sepulchres, we might have concluded that they were erected in honour of the sun or other divinity, *but no such building exists* '. (*Archaeologia*, XLVIII, 428). There are no certain indications of sun-worship in Britain before the importation of Mithraism by Roman legionaries. Objects of foreign provenance bearing supposed solar symbols, such as the cross or the fylfot, were probably accepted by northern peoples as ornaments, without knowledge of their original significance. And ' it must on all hands be admitted that the cross on works of art is very often nothing more than an ornamental device, readily suggested to men of all countries and in all stages of culture '. (Thurnam, *Archaeologia*, XLIII, 400).

The advocacy of the chief exponent today of orientation, however persuasively expressed in the two above-mentioned articles, cannot survive the test of the foregoing axiom. Intentional orientation being assumed as generally granted, a twofold explanation is advanced of its purpose. The first, on which most stress is laid, is that stone circles were set up when men were advancing from the hunter stage to the agricultural, in order ' to establish a calendar which should indicate what the connexion was between the sun and agriculture '. The assumption is appended that the Neolithic or Early Bronze Age farmer had already made the present division of the year into quarter and half-quarter days, with the assertion that the axial diameters of megalithic circles are severally and precisely directed to the sunrises and sunsets of these

divisions. Objections are obvious. The supposition is untenable that any intelligent people would with immense labour rear an assemblage of huge stones to mark the seasons for field-operations, when a few stout posts, periodically renewed, would suffice. It has also been pointed out that the blocking of the view of the sun by the high and broad stones of Stonehenge made such a structure ' useless for calendar purposes except to fix one date, namely the week (if that can be called a date) of midsummer time '. (ANTIQUITY, March 1927, p. 51). And it is more than improbable that any such defined calendar can be traced back for 3000 or 4000 years. The evidence for neolithic corn-growing is only sufficient to show that it must have been a very small supplement to livelihood by the chase, which in turn was succeeded by a pastoral period before the fully agricultural. To attribute any such perfected institution of ' works and days ' to a Neolithic or even a Bronze Age people is a manifest anachronism.

The second explanation, which makes orientation a sepulchral practice, might be deduced more plausibly from the now-proved sepulchral origin of megalithic erections as a whole. More will presently be said on this point. It is suggested that the eastward disposition of Christian churches and burials may be referred to this alleged primitive custom, but the links of so far-reaching a connexion are not apparent. As to the purpose or purposes of these alignments, the orientist falls between two stools. Admitting that stone circles are sepulchral, with the inference that their orientation was a funereal usage, he makes them at the same time to be instruments for announcing the agricultural seasons. But the force of *tabu*, and the sacrosanct character of grave-enclosures with primitive as with modern peoples, would make such a double use as abhorrent as would be the use today of a churchyard as a market garden.

Before considering the methods of the professors of this belief a not unfair comment may be made. It is denied that the surveyors of these monuments had ' any preconception as to what *ought* to be found' (*Archaeologia*, LXXIII, 196). The orientation of Woodhenge is accepted ' because it appeared to be demonstrated by the facts ' (*Woodhenge*, p. 12). But the surveys were surely made to confirm an existing belief or surmise, and the Woodhenge excavators surely *desired* to collate Woodhenge with Stonehenge in respect of orientation. Prof. Macalister, discussing ' a curious psychological difficulty in archaeological research ', observes : ' Let an archaeologist once become obsessed with the idea, *e.g.*, that a defaced inscription must be read

in a particular way . . . he is lost, his eyes will follow the dictates of his mind'. (*Text-book of European Archaeology*, p. 6, note).

The enunciation of the orientist's proposition is this: 'Either (1) the axial lines of megalithic structures are precisely directed to sunrises or sunsets of the quarter or half-quarter days of the calendar, or (2) from some well-defined position within the structure a line of direction is made observable, by some means, to a distant object, natural or otherwise, which line is also precisely that of sunrise or sunset of a calendar day'.

Apart from the extreme unlikelihood that a primitive people could have constructed such a calendar, it is evident that the determination of any such line of direction is purely arbitrary. Including the points of true north and south, and of at least three or four star-rises, a selection is offered from no fewer than fifteen or sixteen possible lines. The surveyor is free to choose any one of all these, and it would be strange if he could not find one which impinges on some external object—a rough stone, a gap in a hill-skyline, *an old thorn tree* (presumably coeval with the circle!) or what not, again at his choice from the entire landscape, and to declare that this was the intentional orientation of the megalithic builder. Any relation between a monument and an object outside it is entirely hypothetical and apparently due to the unrestrained imagination of Sir Norman Lockyer. It is enough to say that there is no fiction which may not be presented as fact by such a choice of data at will.

The same adaptation of data to theory appears in the hypothetical orientation of Woodhenge. 'A line drawn from the centre of the rings', in a direction arbitrarily chosen and 'prolonged beyond the enclosure, cuts the rough sarsen stone lying on the down a quarter of a mile away, known as the Cuckoo Stone'. The author is free to draw any line, and it is sure to encounter some object if sufficiently prolonged, but there can be no possible proof that the builders of Woodhenge drew it, or that any external object came within their purview.

A few examples will illustrate the application of this method. To orientate a certain Irish circle a line is drawn from a stone of the circle over an outlying boulder, '*probably the foundation support of a pillar stone now disappeared*' to a hill-crest beyond, indicating summer solstitial sunrise. (*Archaeologia*, LXXIII, 210).

Of another Irish circle one of the axial lines is continued 400 yards until it strikes 'a small but conspicuous hill-summit'. This is now the site of an old windmill tower, '*but probably had in ancient times some*

sufficient indication of its purpose as a point of sight—a cairn, perhaps, or a pillar stone' (*ibid.*, p. 212). The azimuth of this line is said to be precisely that of 'Bealltaine', May 6. The incongruous admission that this half-quarter day 'was established by King Tuathal, who reigned in the first century A.D.', is no difficulty to the orientist ready with inverted reasoning, for to him it shows that 'the construction of stone circles or of other megalithic remains *persisted to what may almost be called recent times*'!

Another axial line of the same circle is taken across 'the stones at both ends of the diameter '*which have unfortunately disappeared*'. 'The orientation should not, however, for this reason be rejected. It is not only inherently probable but is exact'. It may be asked how can the *exact* position of lost stones in a circle not *exactly* spaced be found?

The italicized sentences show that the alignments are drawn, not only from the superabundant choice of existing objects, but from objects non-existent. It is superfluous to ask how such evidence would be dealt with in a court of law.

The imaginary character of these orientations is well shown when they are affirmed of round barrows (*ibid.*, pp. 214–17). There being no marked starting-point on the bare barrow, the surveyor draws a line *from himself, facing as he chooses, to any outlying object he pleases*. A hill-top marked with a cairn is preferred, whereas, to the present writer's sure knowledge, in Scotland at least a cairn commonly records the killing at the spot of a notable stag in quite recent times.

It is well-nigh impossible to eradicate a popular belief, however false. But to refute the figment of orientation, as thus elaborated, is not difficult; it is indeed self-destructive. It originated in the diametrically mistaken standpoint of its inventor. The Avenue of Stonehenge, as a capital example, has been regarded as purposely laid out to the northeast by a prehistoric surveyor *looking outwards from within the circle*. Now the large and diverse genus of which Stonehenge is a species has *entrances*, varying in length from the short forecourt of the 'horned' grave, through the more extended alley of the passage-grave, to the long avenue of Stonehenge or Avebury. All, in primary purpose, *are ways in, not out*, just as we speak of a road or drive leading up to, not out of a house. It is therefore untrue to say that the Stonehenge Avenue is directed from the circle to the midsummer sunrise. It is nothing other than a road of access, directed, after a curving course of some two miles, *southwest* to the monument. That it does not issue from within, and is no integral part of the

structure, appears from its stopping some ten feet short of the ditch, and it is noteworthy that the stone avenues of Brittany converging on circles are never actually attached to the circles at their termination.[2] Probably a *tabu* prohibited close contact of an external road with the sacred precincts.

The same answer meets the asserted identity of orientation of the three circles of Clava, Inverness, because their three alleys of entrance coincide when superimposed in plan (*Archaeologia*, LXXIII, 218). Such passages are ways of ingress to the centre from without, as is shown by their being closed against entrance after completion of the burial. As to their coincidence, if the burials were contemporary, as is suggested, the plan of the first built would naturally be repeated in the others.

Although the claims for orientation as thus propounded would be dismissed by any legal judge or counsel, nevertheless an orientation exclusively sepulchral, without astronomical precision, and of simple explanation, does obtain in one class of prehistoric structures, namely long barrows with or without chambers or entrances. Of the recorded number in Wiltshire over 80 per cent. are oriented sunward, that is to some point of the compass between north and south through east, and this direction appears to be a general rule wherever these graves occur, though no complete collation has yet been made in respect of this feature. There is little doubt that the authorities are right who have referred this alignment to the sunward disposition of the entrance of the primitive dwelling.[3] Conservatism in custom increases in duration as we recede in time, moreover 'the boundary-line between tomb and dwelling is . . . ill-defined in prehistoric times'.[4] The sepulchral origin of Stonehenge can no longer be questioned, and Sir Arthur Evans has shown convincingly how the whole of its complexity may have been evolved from the simple hut. The traditional aspect of the hut-entrance is probably represented not by the disconnected Avenue, but by the wide sunward opening of the double 'horseshoe' of sarsens and blue stones. Mr R. S. Newall has written: 'The intentional orientation of Stonehenge is confirmed by the fact that the axis does not coincide with the middle of the causeway. Had orientation been

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[2] Lukis, *Wilts Arch. Mag.*, XIII, 83.

[3] Nilsson, *Primitive Inhabitants of Scandinavia*, pp. 124–158. Lord Avebury, *Prehistoric Times*, pp. 126–129. Sir A. Evans, *Proc. Soc. Antiq.*, ser. 2, XXXI, 191–192, and others.

[4] R. A. Smith, *Proc. Soc. Antiq.*, ser. 2, XXXI, 144.

of no importance, one would suppose that the Stone Circle would have been so built that its axis would correspond with the middle of the existing causeway of the older Aubrey circle '.[5] This assumes that the Avenue is coeval with the extant building, but it may with some reason be assigned to its predecessor. That it is of very early date is proved by the space left for its passage in the line of the 'Old King' and 'New King' barrows,[6] and it is so rudely engineered—it varies greatly in width throughout its course—that its non-coincidence with the causeway may only be due to a 'bad shot'. If, however, it belongs to the newer erection and the causeway faced the entrance of the older, the difference between their centres argues that the orientation of each building was sunward, but without the asserted exactitude of an axial line directed precisely to an astronomical point. The word 'axis', indeed, seems as comforting to the orientist as was 'Mesopotamia' in another connexion, but it is questionable whether the primitive architect was equally conscious of this property of his erection. And some little scepticism must be allowed as to the exact value of the term 'precise' so often applied to these lines of direction. Are we asked to believe that the Bronze Age surveyor had attained the precision of his modern successor to a fraction of a degree? A discrepancy of $2\frac{1}{4}$ degrees in an asserted equinoctial line of Woodhenge is dismissed as unimportant (*Woodhenge*, p. 11).

To recapitulate, orientation other than in one limited and scientifically explicable acceptation—calendar orientation or as predicated in any sense of round barrows or stone circles—has no sounder basis in objective fact or logic than had the Druidical, Dracontian, Phallic and other obsolete imaginings.

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[5] ANTIQUITY, March 1929, p. 88.

[6] This inference was made by Hoare; see *Ancient South Wilts*, pp. 157–158, and map to face p. 170.

Dew-Ponds

by Edward A. Martin *

A GREAT antiquity has been claimed for dew-ponds, or rather for those ponds which have passed as such. They are found on the higher parts of the chalk downs of Southern England, and sometimes indeed on their very summits. They first came to be noticed by reason of the fact that in dry weather, when by all reasoning from their exposed position they ought quickly to dry up, they are the very ponds that still carry water, whereas other ponds on the lands below, which are fed by runnels and other drainage, are the earliest to suffer from drought. This is a very real distinction, for the old dew-ponds, to call them by their better-known name, have no drainage beyond the collecting area of their own banks. That observant student of natural history, Gilbert White, was almost the earliest writer to call attention (in the middle of the eighteenth century) to the ponds on the common above Selborne, which, although used for the watering of innumerable cattle and sheep, had never been known in his time to fail. His attempted explanation need not trouble us here, but it is noteworthy that he did not call them by the name of dew-ponds, and this name did not appear until well on into the nineteenth century. Pseudo-scientific people gave this name to something which they could not explain and so the mysterious dew-pond was christened. They still give it the same name, although those living in their immediate neighbourhood still know them as mist-ponds or fog-ponds. The worst of it is that the mystery of the dew-ponds is constantly cropping up in print, and it really seems as if the general public does not want to know the truth of the matter. Mystery always appeals to them and I fear that editors do not always desire to deprive their readers of its fascination.

Many of these ponds are found inside or in close association with earthworks. But the majority are not so found. Early archaeologists

* Author of *Dew-Ponds: history, observation, and experiment.* (Werner Laurie, 1914).

were much concerned, as well they might be, to discover the source from which the inhabitants of earth-walled encampments drew their water. A certain quantity was needed, although we need not imagine that these early men in Britain washed themselves so frequently as modern men do. For drinking purposes and perhaps for cooking, rain-storage within the camp sufficed as a general rule. When this failed, it was necessary to have a reserve and so they fell back on their ponds.

An attempt has been made to show that neolithic man was the first to make and use these ponds, and he may have done so, but that is a very different thing from saying that he made the identical ponds that now exist. With the possession of cattle he would find that any spot much frequented by them would become so puddled that the spot would hold water. If driven at night through a narrow entrance to a camp, that entrance would soon become a quagmire, and so the puddled bottom of a pond would be revealed to him. This might have induced him to dig ponds elsewhere where they would be less of a nuisance, and so sometimes one is found within the enclosure. There is a pond some two hundred feet below the north side of Cissbury camp, but it is not worthy of the name of a dew-pond, as it is sheltered from the incoming southerly moisture-laden winds, and it is not to be imagined that the occupants of the camp would come down all that distance to carry up to the top the desired water, especially whilst they had the whole area of a large enclosed camp in which to make all the ponds they needed.

If neolithic man made these upland ponds, we may ask the question, why neolithic man only? Why not palaeolithic man? Boyd Dawkins used to say that neolithic man came over to England on dry land when the Channel did not exist. This has been questioned, but it is certain that at any rate the Channel could not then have been very broad where it is now narrowest. Palaeolithic man no doubt came over in many migrations when England was completely continental. He may have travelled up the river-system which then existed in the Channel valley and so reached the higher parts of the downs, which were then much the same as now, except that they extended across the Channel, and so found his way to the higher parts. He would have required a supply of water, and if there be anything in the argument that neolithic man made dew-ponds, the argument holds good also as regards palaeolithic man. He may have lingered about what we call the river-drifts, but he would welcome the safety of the high downs, from whence he could see his foes, human or animal. The antiquity

PLATE I

'DEW-POND' ON CHANCTONBURY HILL, SUSSEX

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facing p. 348

PLATE II

THE DEW-POND ON KEYMER DOWN, SUSSEX
Ph. Edward A. Martin

of the dew-pond may be great, but so, too, may be that of ponds which no one would call dew-ponds.

That there is a distinction between the higher ponds and the low-lying ones one must admit. In times before water-pipes were laid across the downs and farms in the hollows had to depend on ponds for their water, it was no uncommon sight to see the inhabitants going uphill for their water. The story about Jack and Jill may have had its origin in fact in the dim past, as I was the first to suggest some years ago in my paper read before the South-Eastern Union of Scientific Societies. These ponds were the purest, and they contained water when all other supplies had failed.

There are many round depressions on the downs which were no doubt once ponds. They are now grass-grown, and water is not retained by them. Some are quite close together, as though, when a pond had failed, the farmer made a new one in preference to taking the trouble to re-model the old one. When once a pond has been satisfactorily made, it seemed to the maker that it would always remain perennial and no further trouble would be taken with it. Another farmer comes along, and not knowing how or when it was made, finds that it is quite satisfactory without further attention. Meanwhile grasses are growing in the pond, and grass is gradually creeping down the banks. Rushes have perhaps appeared, and their roots are perforating the bottom. A third farmer enters into possession, and in course of time finds to his surprise that the water is draining away. So the pond is condemned and unless the farmer has other supplies he makes another pond. Or if he repairs the old one, he digs up all the grasses and with them scoops up the puddle from the bottom that has taken generations to collect. I have seen it laid in heaps at the side of the banks, where it soon dries up in the sun. Then the cleaned depression is left to fill itself, which it generally fails to do.

People who talk about dew-ponds always mention straw as possessing remarkable qualities in the making of a pond. In many of the cases of which I have collected particulars, no straw whatever has been used. In others it has been laid as a foundation under the puddled chalk or clay, and sometimes it has been laid on the puddle, in order to prevent perforation by the hoofs of cattle in its early stages. It is quite possible that straw under the puddle may be of service in a new pond, in its earliest stages, as it would prevent the rise of heat from the earth, and so to some extent eliminate a good deal of evaporation. But it could have but little after-effect, as straw soon

disintegrates under the mass of puddle above it, and if it did not it would become so moist that it would act as a good conductor of heat. In the condition of chopped straw to which it is rapidly reduced it would have some effect in preventing slipping of the puddle near the edges of the pond. The straw which I laid under my experimental pond in the first year was found on digging it up twelve months later to have been so flattened as to have become a conducting layer, was very brittle, and had commenced to turn a peaty black.

Without attaching much credence to the remarkable stories of new ponds becoming filled in a single night, the fact remains that there is some recruiting agent which keeps them fairly well supplied in times of drought, when those at a lower level have ceased to hold water. First of all, of course rainfall is responsible for most of the water. Unfortunately the rainfall is least in the months when it is most needed, and when evaporation is greatest. My experiments made some years ago naturally began with a view to ascertain if dew had anything to do with their filling. I mean real dew, and not other forms of condensation from the atmosphere. A thorn-bush overhanging a pond will condense moisture which will drip into a pond. But this is not dew. Low-lying clouds and fogs, which are no doubt the real recruiting agents, cannot be classed as dew. Dew is produced on good radiators of heat, when those radiators have been reduced in temperature to below a certain point called dew-point. This is familiarly produced on grass in the evening after a hot day, through the rapid chilling of the layer of air in contact with the earth, and the condensation of the moisture which is rising from the soil. Grass, straw, and the like are good radiators of heat, and quickly receive dew. I need not enter into the question that sometimes arises, as to whether dew falls or rises. It is simply deposited. The moisture in the air may rise or it may fall, and so sometimes the dew is on the under surfaces and at other times on the upper surfaces of good radiators. The point to consider is whether it can ever be deposited on the surface of water already in a pond, or on the smooth surface of the chalky banks of the best-kept ponds. Sometimes the grassy surface of the bank has seemed to be quite moist with dew, but it would require a great amount of dew to be formed before it began to run down into the pond. Much of the moisture thus found on a bank sinks at once through the material of the bank. Any vegetation growing in a pond might add a small quota to the water in the pond, as long as the roots of such vegetation do not perforate the bottom. But the best-kept ponds are perfectly clear of

vegetation, and we are driven to ask if the water-surface itself receives dew. This is not an easy problem to tackle. But repeated experiments showed that although the grass around was wringing wet with dew after night-fall, only on very rare occasions did the water-surface temperature go below dew-point. Taking July, August, and September as the months of greatest dew and least rainfall, and dewy nights as on the average one in three, there would be a possible thirty nights of dew. On each night there might be a possible six hours of dewfall, or 180 hours altogether. During the course of my investigations there was a possible five hours in those months when the surface water went down below dew-point.

Although fogs and mists are to my mind the critical factors in keeping ponds alive, these would be of little avail were it not for the rainfall. The rain-gauges that I kept on the top of the downs showed that rain was there precipitated some thirty per cent. more than in the Weald below. But apart from this increased rainfall, the great collecting area of a pond has often been overlooked. There is a level higher than which a pond never seems to rise. Above this there are the collecting areas of the banks, and in cases I have met with, the area of the surface of the water has to be trebled or quadrupled in order to arrive at the area of the banks. Nearly all the water from heavy rains runs at once down into the pond. When there are only moderate rains a good deal of the water goes through cracks, or goes to saturate the surface of the dry puddle, after which it begins to go down into the pond. Downland mists and low-lying clouds settle in hollows on the downs, and are the last to disappear thence. Although difficult of proof, I have no doubt that it is to these that we are indebted for the maintenance of ponds in the drier months.

One thing is certain. It is obvious that a pond can never receive any dew worth mentioning, and therefore there is no such thing in nature as a real dew-pond.

Notes and News

ROMAN LIGHTHOUSES AT DOVER

By kind permission of Dr MORTIMER WHEELER, F.S.A., we are able to print a summary of his valuable article on 'The Roman Lighthouses at Dover', written by him for the forthcoming volume of the *Archaeological Journal*, to be published at the same date as this number of ANTIQUITY.

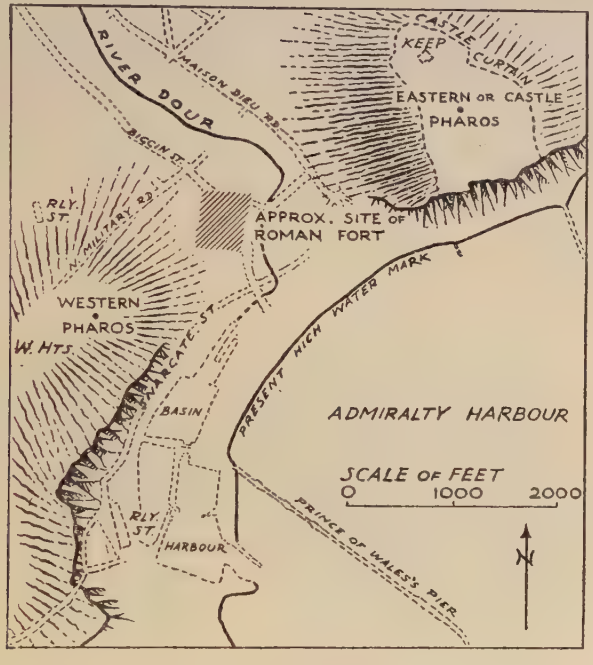
The first of the towers described is on the east cliff or Castle hill of Dover. During some repairs undertaken by the Office of Works in 1913–15 plans and sections of this pharos were prepared and these have enabled more definite conclusions to be drawn than has hitherto been possible. Earlier accounts may be found in the *History of Dover Castle* written by William Darell, chaplain to Queen Elizabeth, which was not published until 1786; in Stukeley's *Itinerary* (2nd edition), and in Gough's edition of Camden. A partial survey was carried out in 1872 by W. E. Peck and this was published in *Archaeologia*, vol. XLV.

The tower is 13 ft. 10 ins. square on plan internally; it is octagonal externally, with sides 15 feet long at the base; and it still remains standing to a height of 62 feet, of which the uppermost stage, 19 feet, is medieval. The lower stages (43 feet) are four in number. Internally the walls rise vertically; externally the masonry was refaced in the middle ages and was battered back to its present outline. This sloping outline has hitherto been regarded as an original feature but Roman builders rarely used the batter, and the Dover tower is no exception. Most of the Roman facing-stones have disappeared but on the south side of the tower a part of the original vertical face of the plinth has been revealed, and the vertical, weather-worn face of the upper part of the first stage can be seen on the southwest side between the third and fourth brick-courses. The extent of the set-back of each stage—Roman work—is well seen on the southeast side, where the depth of the wall-recesses is reduced by a foot in each successive storey. The tower, therefore, had once a stepped or telescopic outline, which, if continued to a logical conclusion, implies an original height of about 80 feet.

The core of the walls is of rubble with strong white mortar; the facing is of green sandstone and tufa, held by pink brick-dust mortar

and levelled externally at regular intervals of seven courses with double (rarely single or triple) courses of brick.

The main features of the internal arrangements are of interest. Each stage was floored with planking carried on two main beams of nearly one-foot scantling, held in square sockets in the north and south walls. The ground story was of the exceptional height of $17\frac{3}{4}$ feet and was entered by a doorway $9\frac{1}{2}$ feet high in the south side, which at the base was nearly 12 feet thick. In the northern wall was an arched



recess, 11 feet high, with a small arched window above. The purpose of this recess is not clear. The other storeys were from $7\frac{1}{2}$ to 8 feet high.

The old identification of this Roman tower as a lighthouse may be accepted without hesitation. Its position, 380 feet above the sea, made it visible from the Channel and useful as a guide to sea-traffic.

In discussing the probable date of the pharos Dr Wheeler refers to one at Boulogne; which stood until about 1644, but of which only a fragment now remains. This he suggests may have been of the first century A.D., but for the Dover Castle pharos he feels there is little basis even for conjecture, though there is some ground for thinking that

a lighthouse on the Dover cliffs would have been necessary as early as the first century.

The second of the lighthouses described is the one which stood on the opposite side of the valley of the Dour, some three-quarters of a mile away on the Western Heights. It is mentioned by Leland, Lambarde, and Camden, none of whom refer to the Castle pharos. There can be no doubt as to the position of this western lighthouse for it is shown on a drawing of Dover harbour made about 1543, and now in the British Museum, and Dr Wheeler has also been fortunate in finding in a private collection a painting (which is reproduced) of Dover in about 1690 which shows the remains of the pharos at that date.

Lambarde calls this western tower ' the Bredenstone ' ; Camden names it ' Ara Caesaris ' or ' Caesar's Altar ' ; Montfaucon, ' La goutte du Diable ', and ' Devil's Drop ' is used in English accounts of the 18th century. Its familiar names appear to have become ' Bredenstone ' or ' Devil's Drop '.

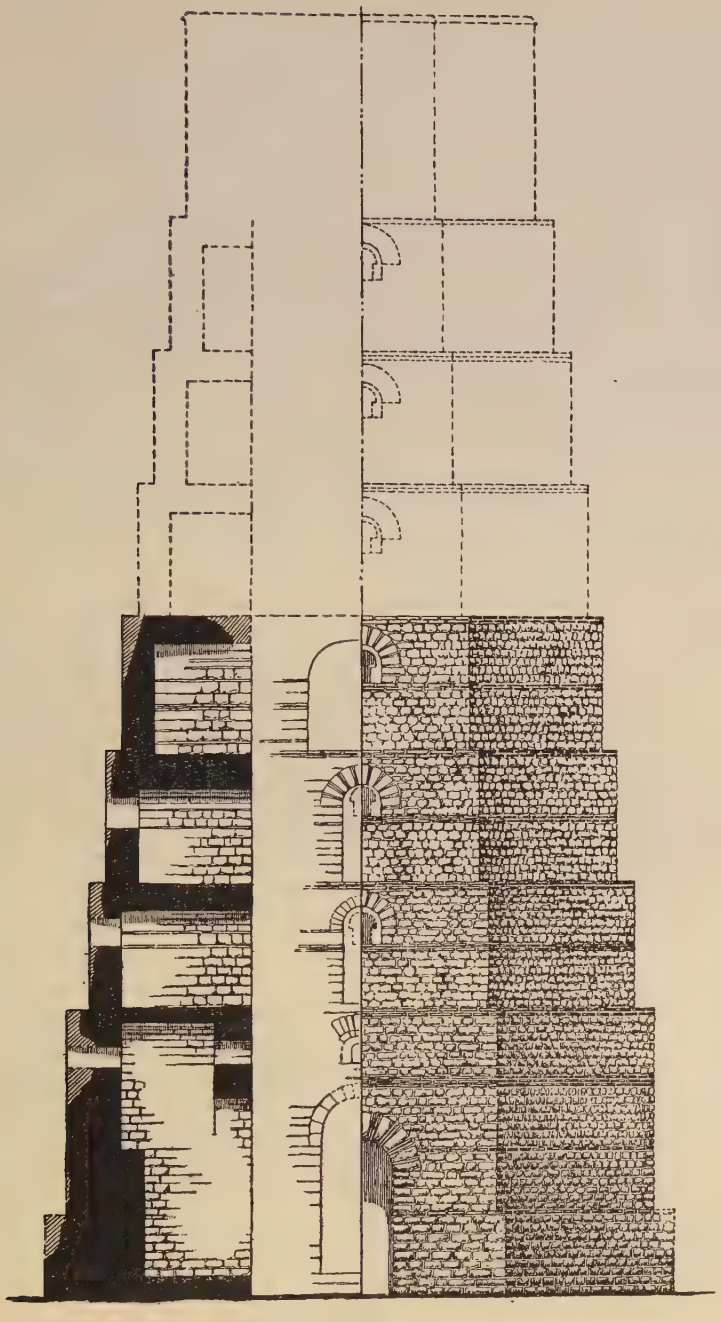
Drawings made in 1760 show that the western pharos had lost all its dominating character and had become a formless mass of masonry. In 1805–6 even its remains were buried under some fortifications thrown up to meet the threat of invasion. In 1861 excavations for building barracks resulted in the pharos being once more brought to light and a photograph taken at the time is reproduced with the article. It shows beneath about 12 feet of mixed chalk and humus a rough projecting layer of cemented rubble, containing two or possibly three brick-courses. About the centre of the concrete is a depression, which is said to have contained charred wood and ashes. A sketch signed by the engineer in charge of the work in 1861 records that the total width of the masonry then exposed was 30 feet and its depth 9½ feet.

The fortification is now known as Fort George or the Drop Redoubt—the latter name perpetuating the Devil's Drop beneath it. The Drop itself, imbedded in the stonework in 1861, shows merely as a long streak of Roman flint-rubble concrete surmounted by a tile-course. Overhead, on the surface of the redoubt, three chunks of the concrete, hewn off the foundation in 1861, have been set up in rough imitation of the fallen masonry which represented the stump of the pharos in the 18th century.

' Two points remain to be noticed about this western tower. In the first place, it was built wholly or in part of re-used materials. The mixed character of the tiles and bricks used in its construction was noted in 1861 ; and " a large piece of Roman tile . . . of the kind

ROMAN PHAROS IN DOVER CASTLE

PARTIAL RECONSTRUCTION IN SECTION & ELEVATION FROM THE SOUTH



By permission of the Royal Archaeological Institute

found in hypocausts ", extracted " from one of the horizontal courses of tiles which occurred in a counterpart, on the Western Heights, Dover, of the well-known Pharos " was presented in 1863 to the Society of Antiquaries of Newcastle-on-Tyne. Another flue-tile, taken from the structure in 1861, is now in the possession of Mr E. O. Hambrook in Dover. Furthermore, a flat block of ragstone found " embedded on its face in the mortar " was thought by Canon Puckle to be a fragment of re-used carving. In construction, therefore, the western pharos may be contrasted with the eastern, which seems to lack second-hand material. On the other hand, it conforms in every respect with the normal methods of the builders of the Saxon Shore defences at Richborough, Lymne and elsewhere ; and may with reasonable safety be ascribed to the latter part of the Roman occupation.

' In the second place, whilst there is no definite evidence that the Castle pharos contained tiles with the CL(*assis*) BR(*itannica*) stamp, it is certain that such tiles were included in its western neighbour. One of them is now in the possession of Mr Hambrook ; another is said to have been sent to Cambridge, but I have been unable to trace it. The tiles may indicate that the western tower was an official work of the Channel Fleet. But too much stress should not be laid upon this possibility, for tiles bearing this stamp occur abundantly in Dover and may therefore have been introduced into the tower with other second-hand material.

' There our present knowledge of the structure on the Western Heights ends. We know of this structure that it stood up as a tower, that it was possibly polygonal on plan and that the earlier antiquaries were unanimous in identifying it as a lighthouse. They were probably right. The only possible alternative is that it was a monumental tower-like tomb of a type common enough in the Roman world. A notable example of such a tomb has long been known on Mersea Island in Essex, and at Dover a Roman cemetery certainly lay along the foot of the heights upon which the western tower stood. . . . On general grounds, it seems likely that the structure was erected as a sea-mark and a watch-tower in those latter days when the Roman equivalent of the Dover Patrol was busy about the Kentish coasts. The name " pharos " may provisionally therefore, stand. The twin towers, on the heights flanking the Dover fortress, would serve not merely to " bracket " the harbour but would form a usefully distinctive feature amongst the coast-wise signals. Stukeley in his imaginary view of Dubra may more nearly have hit the mark than he sometimes did '.

LOWLAND LONG BARROWS

As a key to the distribution of population in neolithic times long barrows are of great value. Most of them occur on high ground, and it has generally been assumed that the lowlands were but sparsely populated. It is high time to give up this habit of thinking in terms of upland and lowland. It was not elevation primarily that determined the choice of prehistoric man, but vegetation and water-supply. If a lowland region was open and free from trees, and if there was a good water-supply, then he settled there. The gravel flats of the Upper and Middle Thames valley satisfied these requirements, and have been thickly inhabited from the Bronze Age to the present day. It is certain that they were also inhabited—how densely we do not yet know—during the neolithic period. This is proved by the discovery of a habitation-site of neolithic type, with interrupted ditches, near Abingdon, together with neolithic pottery and other objects characteristic of the period. That this site belongs to the long barrow period is certain. It is even possible that a long barrow might actually have existed close by. During the dry summer of 1928 I observed (21 July) an oval brown mark in a field a quarter of a mile northeast of the neolithic settlement. It was so plain that I was able to measure it.[1] Last year, when the whole area was air-photographed, the marks were unaccountably absent. This year they are plainly visible again. I saw them when flying over Abingdon on 5 June, and it occurred to me that they might be the remains of the ditch of a long barrow. If so however it is not quite normal. They go round one end of the barrow, for instance, but so do some of the ditches round long barrows in Wessex. The ditch is also much narrower. The plan of the ditch is unlike that round any normal barrow that I know of ; it has for instance no resemblance to the ditch of a twin barrow, which is egg-shaped. Excavation is badly needed, especially as the site will probably be built over or dug away before long. The site is 200 feet above sea-level.

I noticed a similar mark in a cornfield southwest of Stonehouse Farm, southeast of Kirtlington Park. There is nothing at all to be seen on the ground. The spot is 230 feet above sea-level.

An undoubted long barrow is still to be seen on the west side of the Banbury road, one mile west of Bletchington station. It stands on the boundary between the parishes of Shipton on Cherwell and

[1] Its dimensions were:—length (internal), 33 paces; breadth (internal), 12 paces; width of ditch, 3 to 4 paces. There was a gap visible in the ditch at the east end.

Tackley and is called ' langan hlaew ' (long low) in the bounds of that parish of A.D. 1005.[2] The barrow is called Long Banck on a map of Whitehill Farm of 1605,[3] and it is still plainly to be seen. It is under cultivation, and has of course been ploughed very low, but it is still a perfectly recognizable mound, slightly more stony than the rest of the field. It is oriented ENE and WNW, and the east end is apparently higher and broader. Its length is 70 yards. In his schedule of Oxfordshire antiquities,[4] Mr E. T. Leeds called attention to the possibility that this ' langan hlaew ' might have been a long barrow. It was not known however where it was situated until the site was indicated by the aforesaid old map. It is about 310 feet above sea-level.

Another certain long barrow is one lying on a gravel flat between Bournemouth and Christchurch, Hants, not far from the confluence of the Stour and the Wiltshire Avon, in Holdenhurst parish (Hants, 86 NW, lat. 50° 45′ 0″ N, long. 1° 50′ 5″ W). It was discovered by Dr Clay. It stands in a ploughed field and is conspicuous by the colour contrast between the long mound and the rest of the field. Not far away there have been found remains suggesting a contemporary habitation-site. It is less than 30 feet above sea-level.

This is the only long barrow known to exist within the Tertiary regions of the Hampshire or London basins. If one had been asked to say where, within these two barren areas, a long barrow was most likely to be found, one would have unhesitatingly replied ' somewhere near Christchurch '. For here, as I long ago pointed out,[5] must have been the port of Wiltshire. And not of Wiltshire only ; for the Stour valley is a corridor leading to the populous downs of Dorset just as that of the Avon led to Wiltshire. Where the two routes converged, there one would be sure to find remains. But to find a long barrow itself was more than one hoped for, and Dr Clay is to be congratulated upon a discovery of more than usual importance. O. G. S. C.

HADRIAN'S WALL

The following account by Sir GEORGE MACDONALD, K.C.B., is reprinted by permission from *The Scotsman*, 7 July :—

' One hundred and twenty-nine years ago, almost to a day, William

[2] Printed in *The Cartulary of Eynsham* (ed. H. E. Salter) I, 23.

[3] Published in facsimile.

[4] *Archaeologia*, LXXI, 227–65, based upon the Percy Manning MSS. See also my *Long Barrows of the Cotswolds* (John Bellows, Gloucester, 1925), p. 214.

[5] *Geographical Journal*, 1912, p. 186. See also *American Geographical Review*, 1922, XII, 257–63.

Hutton, born in 1723, bookseller in Birmingham and founder of the first circulating library, set out to see for himself " the greatest of all the curiosities left us by the Romans ". July 4, 1801, witnessed his departure from his own front door. As he is careful to tell us, he was dressed in black, and carried over his shoulder a wallet " of the same material ", which was filled chiefly with maps, and to which there was strapped a large green umbrella. Thus attired and equipped, he tramped through Lichfield, Warrington, and Liverpool, and thence to Ambleside, and over the Kirkstone Pass to Penrith and Carlisle. There he turned westwards to the end of the Roman barrier at Bowness-on-Solway, where he picked up the line, and followed it through Cumberland and Northumberland to the mouth of the Tyne. He then returned upon his tracks to Carlisle, " having crossed the kingdom twice, under a burning sun and without a drop of rain, in seven days and six hours ". From Carlisle he made for home, taking the route over Shap Fell and so southwards through Wigan and Preston. The end may be described in his own words :—

> " By easy marches I arrived at Birmingham, August 7, 1801 ; after a loss, by perspiration, of one stone of animal weight, an expenditure of forty guineas, a lapse of thirty-five days, and a walk of 601 miles ".

It was an astonishing feat for a man of 78. The wonder grows when we learn from his daughter that from first to last he never changed his stockings. A cynic might add that the Society of Antiquaries of Scotland had shown rare discernment when they made him a member in 1782.

' In the preface to the account of his journey Hutton wrote with pardonable pride :—" Perhaps I am the first man that ever travelled the whole length of this Wall, and probably the last that ever will attempt it. Who, then, will say he has, like me, travelled it twice ! " He reckoned without Dr Collingwood Bruce. In 1849 that well-known Northumbrian antiquary led a band of enthusiasts from Wallsend to the Solway. It is a significant indication of a change in the point of view that Bruce should have provided himself, not with a green umbrella, but with a pilgrim's staff, fashioned from one of the oaken piles which had supported the bridge thrown over the Tyne by Hadrian seventeen centuries before. The pilgrimage was such a success that it was more than once repeated at intervals of several years.

' In 1886 those interested decided to make it a decennial event, and the sequence continued unbroken until 1916, the July of which found all

Tyneside, either in body or in spirit, on the Somme. The thread was resumed in 1920, so that the doings of last week represent the second of a new series of celebrations. *Tempora mutantur*. It is a far cry from the green umbrella and the single pair of stockings to the thermos flask and the internal combustion engine. But even Bruce would have been hardly less astonished than Hutton, could he have seen the long line of motors, stretching in close order over more than a third of a mile, as they sped westwards conveying the pilgrims of 1930 to the various points of vantage.

'It was indeed a notable gathering, and that not merely in respect of size. Serious students of Roman Britain were there from every part of the country, and Germany sent a delegate from Mainz in response to an official invitation. From beginning to end the organisation was admirable. On Monday evening Mr R. G. Collingwood, of Oxford, who had written a compact little *vade-mecum*, which was put into the hands of every pilgrim, gave a lucid introductory lecture in Newcastle. On each of the next four days a section of the Wall was covered, the programme being arranged with such skill that there was no undue hurry anywhere and yet nothing of importance was missed. Time was even found for a visit on Friday afternoon to the signal-stations erected on the Cumberland coast as a precaution against a flank attack from overseas. Wherever a halt was called, one or other of the experts best qualified to speak was in attendance to give verbal explanations and to answer questions. Every now and again a bit of excavation, designed to elucidate a particular problem, had been carried out and the ground left open, in order that the pilgrims might appreciate the methods by the patient application of which our knowledge of the Wall has been in recent years so enormously extended.

'Lastly, by some happy chance, the joint-committee of the two Societies responsible had succeeded in squaring the Meteorological Office. Except for some showers on Friday morning, the weather was perfect throughout. It was specially brilliant on Thursday, the afternoon of which included the magnificent walk from Great Chesters to Carvoran. Under such conditions even the least emotional could hardly fail to be stirred by the feelings to which Haverfield has given such eloquent expression:

> "Here the remains of ancient splendour abide in bold characters. Forts stand visible on the hillsides, lifting above the grass the masses of their stubborn masonry; the Wall itself still rises shoulder-high for hundreds of yards together; nature and man combine in a

unique landscape. As you look east and west, and trace the long line winding for miles from end to end of perilous ledges, and climbing from hill to hill, as you turn south to the Tyne and the dark fells beyond it, or north to long flat wastes and pathless mosses, the vision of a great Empire rises. Here, on the uttermost limit of the Roman world, the desolate land has been stamped for ever with the sign of its former lords. On these high moors we can realise, almost more clearly than in the Forum of Rome, the secret of that defence by which Rome guarded the fabric of civilisation through the long menace of darkness and dissolution ".

' With such words fresh in one's mind, it may well seem incredible that Hadrian's Wall should be in imminent danger. Yet there is no manner of doubt that it is. The protesting voices that made themselves heard a few weeks ago have been far too easily lulled into silence. In essence the issue is simple in the extreme ; it is a matter of comparative values. For one who is uncompromisingly on the side of the angels, it would be as easy as it would be idle to say hard things of the promoter of " Roman Stone Limited " and to wax indignant over the ill-omened name he has been frank enough to select for the company he proposes to float. But his case was put to me fully, even sympathetically, only three days ago by one who knows it well, and I was forced to admit that, given his point of view, there is no answer to his arguments. The real question, however, is whether the public are prepared to make that point of view their own. If they are, then there is no more to be said. If, on the other hand, they believe that this unique national monument, with the matchless landscape in which it is set, is a possession which no money could buy and which no expenditure, however lavish, could replace, then it is for them to set politics aside and to insist through their Parliamentary representatives that the necessary steps for its protection shall be taken forthwith. I went to Newcastle with vaguely comforting rumours of negotiations ringing in my ears. I did my best to follow these up. But the nearer I got to the heart of things, the more nebulous did the negotiations become. The sponsors of the quarrying scheme are animated by the best intentions, and one need not call in question the sincerity of their assurances that they mean to spare the Wall itself. Nevertheless I speak of what I know when I say that, once the process is begun, the ultimate result is inevitable. Unless the plague be stayed, the Pilgrims of 1940 will find that their way leads through the Valley of Humiliation. It will be too late then to remember that at the end of this Valley is another, called the Valley of the Shadow of Death'.

GLOZEL AGAIN

We have received a letter from Count Bégouen, Professor of Prehistory at Toulouse, with regard to the reference to him made by M. A. Vayson de Pradenne in the article on the Glozel forgeries in the June number of ANTIQUITY. Count Bégouen writes :—

Dans son article si interessant et si documenté sur Glozel, M. Vayson de Pradenne me cite (p. 211) comme étant de ceux qui feraient parte, à la suite de l'éminent historien Camille Julian, du groupe des Glozéliens schismatiques. Or je n'ai jamais admis que Glozel peut être préhistorique ou même néolithique et j'ai été des premiers à oser le dire. Mais sous l'influence d'un maitre admiré et aimé j'en étais arrivé à m'imaginer reconnaître des caracteres et des mots latins dans les signes grossiers de Glozel. À la suite de l'étude des publications du Dr Morlet j'éprouvais des doutes de plus en plus sérieux que l'article de M. V. de P. au Société préhistorique francaise transforma en certitude. Puis vinrent les observations de M. Dussaud, d'autres, encore. Depuis lors Glozel n'a pas eu d'adversaire plus résolu et ardent que moi, ainsi qu'en témoignent mes brochures et mes nombreux articles de polémique. Cela m'a valu assez d'attaques et d'injures pour que je tienne à revendiquer ma place au premier rang des antiglozéliens.

It will be seen that Count Bégouen does not contradict any of M. Vayson de Pradenne's statements.

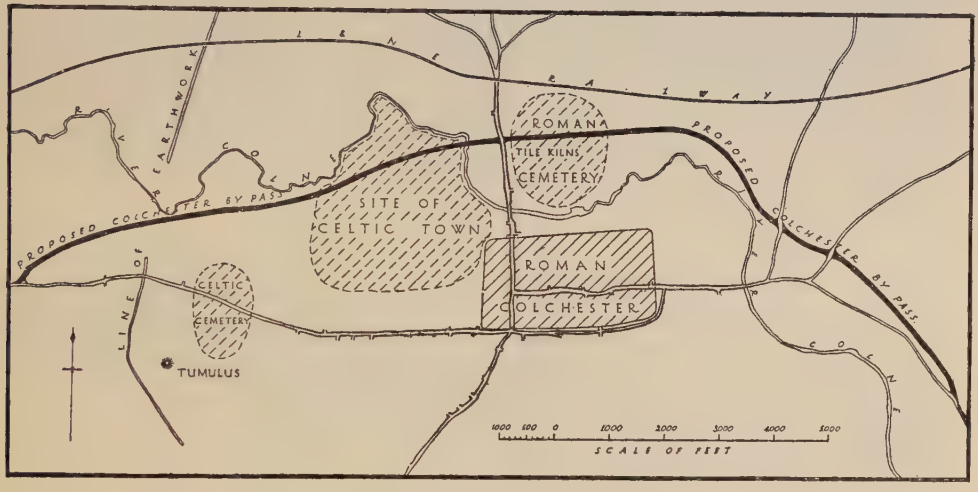
THE CITY OF CUNOBELIN

The following is abridged from an appeal recently circulated for the excavations which have become necessary on the site outside Colchester (see plan), where Cunobelin, the British king, had his capital and minted his well-known coinage. Celtic *towns* before the Roman conquest were few, and seem to have been the work of the Belgic invaders of the 1st century B.C., either on fresh sites or as enlargements of smaller existing settlements, as probably at Colchester. No more historic site is to be found in our country than this, the seat of successive British kings, captured by the Roman Expeditionary Force under Claudius himself, and thereafter superseded by the colony that was the first objective of the rebellion of Boudicca.

Up to the time of going to press the first results of the work prove that the claims that have been made are in no way exaggerated. The excavations are being carried out scientifically, and the material is

abundant, providing, in particular, striking evidence of the effects, for half a century before the conquest, of the commercial influence of Rome. The opportunity for this important work of research is not going to last long, and once gone it can never recur; thus the need of financial support is exceptionally urgent.

'The town of Colchester is the recognized successor of the Roman Camulodunum, the senior colony of the Province of Britain, and one of its leading cities. It has long been known that on the north and west of the town there exist not only a large cemetery and industrial buildings belonging to the Roman colony, but also extensive remains of a great pre-Roman settlement defended by a series of formidable earthworks.



The evidence is clear: Roman graves and kilns have constantly been attested on the left bank of the river Colne, while on the right bank British coins, pottery, and other relics of intensive occupation are found over a wide area. The Colchester and Essex Museum already possesses a fine collection of these, and they fully confirm the belief that here stood the capital city of King Cunobelinus—Shakespeare's Cymbeline—the great chieftain of Belgic stock who ruled over all southeastern Britain for about the first forty years of the first century A.D., and brought the Celtic civilization of this country to its highest level of achievement.

'The founding of the adjacent Roman colony within seven years of the conquest of A.D. 43 inevitably ended the life of this, the richest and most important native centre in the whole island, and, as the site has since remained unoccupied, an extremely valuable and practically

undisturbed body of material awaits the archaeologist. It is fully anticipated that the discoveries will form a basis for the study of the native culture at the height of its development, and assist in solving the problem of its interaction with the Roman influence.

'The question of excavation has suddenly become urgent, for, under the sanction of the Ministry of Transport, the building of the new Colchester by-pass is being undertaken this summer. This road, eighty feet wide and three-and-a-half miles long, beside which houses will soon spring up,* is already being driven right across the British settlement and over the Roman cemetery and buildings.

'The work of excavating the threatened area [begun on 16 June], is under the general direction of Mr J. P. Bushe-Fox, F.S.A. The Trustees of the British Museum have lent the services of Mr Christopher Hawkes, of the Department of British and Medieval Antiquities, and Mr M. R. Hull, the Curator of the Colchester and Essex Museum, will take an active part in the supervision. The Oxford University Archaeological Society is also being responsible for a part of the work under the direction of Mr J. N. L. Myres, F.S.A.

'The work must be carried out systematically and on an adequate scale, which will be impossible without a large measure of financial support. The occasion clearly demands an exceptional effort; the crucial importance of the site is manifest, and as the area from which detailed evidence must be recovered by the spade is more than two miles in total length, the undertaking is no slight one'.

Altogether, £2000 is needed, of which about £900 has already been subscribed. The end of the work is by no means yet in sight, and we cordially support the appeal for more subscriptions, which should be sent to the Hon. Treasurers, Colchester Excavation Committee, Barclays Bank, Colchester.

AN UNKNOWN MEGALITH

The plate reproduced opposite is from a photograph which must have been taken about 50 years ago and is kindly sent to us by a subscriber to ANTIQUITY. We shall be glad if any of our readers can identify the monument.

It is not impossible that it represents a chambered monument of a type well known in Cornwall, Ireland, Brittany and the Iberian Peninsula, but a foreign location for the photograph is improbable.

* If that is to happen—and it should not be allowed—what is the good of making the by-pass at all?—EDITOR.

AN UNKNOWN MEGALITHIC MONUMENT
From a photograph taken in the 19th century

facing p. 364

Recent Events

The Editor is not always able to verify information taken from the daily press and other sources and cannot therefore assume responsibility for it.

The excavations at Ur were closed for the season on 18 March. In a communication to *The Times*, 13 May, p. 15, Mr C. L. Woolley described the remains of a temple built by Nebuchadnezzar found on the east side of the line of the canal where it enters the harbour. The preservation of the building is remarkable. It stands nearly 20 feet high and the mud-brick walls still retain their plaster and coat of whitewash.

An Expedition financed by the Percy Sladen Memorial Fund and directed by the British School at Athens, has completed the excavation of a prehistoric site in Western Macedonia, on the south bank of the Haliakmon. From the pottery found it appears there were three phases in the history of the site and that it was occupied from Neolithic times until the Early Bronze Age. A report is printed in *The Times*, 16 May, p. 15.

Encouraged by the success of the exhibition designed to illustrate Romano-British art, held last December, the Burlington Fine Arts Club has recently arranged one representative of Art in the Dark Ages (*c.* 700–1000). The principal exhibits are briefly described in *The Times*, 20 May, p. 14, and an illustrated article by Mr Reginald A. Smith is in the *Burlington Magazine* for July.

In collaboration with the State Museum at Constantinople Mr D. Talbot Rice has been working on the ruins of the Myrelaion, a 10th-century church filled with rubbish to the tops of the columns supporting the roof. (*The Times*, 21 May, p. 15). We hope to publish an account of Mr Rice's work in an early number.

The site of a small Norman castle of 12th or early 13th century has been found on Camp Hill, in Lydney Park, Gloucestershire. (*The Times*, 31 July, p. 11).

Recent work at Knossos includes the discovery of an outer entrance system to the Palace on the western approach to the site, the remains of a fortified entrance camp having been found. There are also remains of two more of the circular pits filled with sherds illustrating the finest ceramic work of the Middle Minoan period. These and other features of interest are reported in *The Times*, 20 June, p. 15.

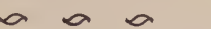
A report on the third season of the Brunton Archaeological Expedition to Egypt on behalf of the British Museum shows that the results have been of particular interest. The most important discovery was a temple, near the village of Matmur, built by Rameses II in honour of the god Set. This and other finds are described by Mr Brunton in *The Times* of 24 June, p. 10.

The Government of Gibraltar are taking steps to establish a Museum of objects of archaeological interest relating to the Rock. With the help of 'The Gibraltar Society', one of whose aims is to assist in this particular project, it is hoped that a representative collection will be made, and the Governor of Gibraltar appeals in *The Times* of 5 July (p. 12) for help from those who may possess such objects.

The Near East Research Mission of the University of Michigan has been working this year at Karanis, in the Fayyum. The temple site of Pnepheros and Petesuchos has been cleared. (*The Times*, 12 June, p. 13).

The Italian Mission in Egypt, directed by Prof. Giulio Farina and Prof. Giovanni Marro, has completed the examination of the region round Gebelein, and in the desert near El Gherera North they found a pre-dynastic cemetery with 200 tombs, a few of which were of the first dynasty. There is claimed to be evidence of a racial element with special characteristics differing from those of the historic period. (*The Times*, 12 June, p. 13).

The annual Congress of the South-Eastern Union of Scientific Societies was held at Portsmouth in June under the Presidency of Mr O. G. S. Crawford. There was a good attendance of members of affiliated societies and papers were read before the various sections and the Congress as a whole. Excursions were made to places of interest.



The first 'flint mines' to be found in Wessex have recently been discovered not far from Salisbury by Dr Stone, who has excavated one of the shafts and found many flint axes and other remains. A full account will be published in due course.

A special article on the pre-Roman settlement at Colchester and the subsequent Roman occupation of Camulodunum was published in *The Times*, 24 May, p. 13. Emphasis is laid on the importance of the proposed excavation of the site of the Celtic town, through which—and also the Roman cemetery—a by-pass road is to be constructed.

Excavations have been resumed during August in the neolithic and Iron Age camps at the Trundle, Goodwood, under the direction of Dr E. Cecil Curwen.

Something that seems remarkably like a dolmen has now been reported from what was once German East Africa. A native, questioned by a missionary about the oldest things he knew, described some Ndwika stones (as they appear to be called). One, near Namitema, stood on three legs, like a stool. Another, of which a photograph is reproduced (in *Central Africa*, the monthly magazine of the Universities' Mission, vol. XLVIII, May 1930, p. 93) is near Lulindi. 'The large flat stone stands not on another stone but on an ant-hill. The top is piled up with little stones, almost certainly put there by people as offerings to the spirits'. We wish to thank one of our readers for kindly drawing our attention to this interesting note, and at the same time to ask our East African readers to try and obtain for us photographs of some of these monuments for publication.

Reports have appeared of the excavation of a prehistoric city claimed to be Sodom. It is situated 'on a plateau between the Wadi

Gharbeh and the Wadi Djarafa in the region called Teleilat Ghassul '. It is said to have been ' destroyed by fire at the close of the first Bronze Age and never rebuilt '. (*Catholic Herald*, 31 May and *The Times*, 23 July). Further and more exact information is obviously desirable.

Mr J. H. Craw has been excavating a broch at Evie in the Orkney Islands. (*Scotsman*, 12 June).

A human skull of peculiar character has been found in a 12th-century graveyard at Gardar (Igaliko) in Greenland. It is regarded as a case of acromegaly—an atavistic reproduction of some of the most characteristic features of Neanderthal man. (*Times*, 6 May, p. 13).

Dr Campbell Thompson's excavations at Nineveh have been continued and, thanks to the generosity of Sir Charles Hyde, at least two seasons' more work on the site is assured. The results of last season's work are published in the *Birmingham Post*, 17 April.

It is claimed that the little village of Blewbury in Berkshire is still partly enclosed by mud walls of Saxon origin. If this were so it would be a unique survival, but we fear it is not. However, we do hope that, whatever their age and purpose, they will not be allowed to fall into ruin for lack of a little timely care. (*Daily Telegraph*, 7 April).

Mr and Mrs Cunnington have located the site of the Sanctuary (so called) on Overton Hill (also called Seven Barrows Hill) near Avebury, Wilts. Here stood two concentric circles of rough Sarsen stones, at the southeast termination of the Kennet avenue. The deliberate destruction of them was begun in Stukeley's day, but not before he had time to make and publish a drawing of them ; and the existence of the circles was of course already known even then from Aubrey's 17th century plan. The present excavations, however, have not only placed the remains on the map again, but have discovered all the stone-holes and a series of post-holes. We shall not attempt to say more until the official account appears ; meanwhile we wish to record as a news-item the completion of a very satisfactory piece of scientific excavation.

Dr Von der Osten (whose preliminary travel-report has already been noticed in ANTIQUITY, June 1930, p. 271) is now excavating a Hittite site at Giaour Kale, near Konia. (*Morning Post*, 10 June).

In a recent interview Sir Flinders Petrie stated the ultimate aims of archaeology concisely, as follows :—

' The value of archaeology is to discover the histories of other nations, to bring to light the reasons why they became powerful and why they fell. Our work is to provide the world with data to avoid the mistakes of those who have gone before us. We have revealed the fall of the Romans and the causes for that fall, and we present the results of our investigations to the Governments of today. They must act upon them '. (*Birmingham Evening Despatch*, 19 June).

We do not usually record personal or social events in this journal, but we cannot omit a reference to the jubilee dinner given by Mr Robert Mond to celebrate the completion of 50 years' research by Sir Flinders Petrie. It was a great occasion, most happily staged, with a minimum of speechifying and a maximum of pleasant informal intercourse. It was, one felt, essentially a gathering of workers assembled to do honour to the doyen of their profession.

In the present number we publish a paper by Mr Leslie Mitchell on South American archaeology. We had long been trying to obtain an article on this subject, but hitherto without success. We hope to publish in forthcoming numbers other articles by Mr Mitchell on branches of the same subject.

Mr R. BROOM, of Grahamstown, South Africa writes to *Nature* (31 May, p. 814) :—' The little fossil ape skull that was found at Taungs five years ago is, in the opinion of many, the most important fossil ever discovered. It is manifestly the remains of an anthropoid ape somewhat allied to the chimpanzee, and of about the same size. But it differs from both it and the gorilla in a large number of characters, and in almost all these characters it resembles man. It thus seems highly probable that it is very near to the ape from which man sprang, and possibly a representative of the very genus. One difficulty has been our ignorance of the age of the cave deposit. The bone breccia found

in most caves has proved to be of Pleistocene age, and if the Taungs cave is also of this period, then *Australopithecus* would be too recent to be a possible human ancestor, as man is known to have existed in the Pliocene'.

From a careful scrutiny of the animal remains in the associated bone breccia, however, Mr Broom is inclined to favour an earlier date, and he concludes :—' As no forms exactly similar to those of this breccia are known from elsewhere, we cannot, of course, determine the age with certainty. As, however, all the mammals are extinct forms, the evidence is strongly in favour of the deposit being Pliocene, and I think quite likely it will prove to be Lower Pliocene '.

The discovery along the banks of the Yellow river in East Shensi of palaeolithic implements resembling the Mousterian culture associated with Neanderthal man was announced at the annual meeting of the Chinese Geological Society by Père Teilhard de Chardin, the French palaeontologist, who, with Père Licent, found traces of a similar culture on the borders of the Ordos desert in 1923. (*Manchester Guardian*, 3 June).

The French Government has made a grant to enable the ruins of Tanis, the great city of the Delta, to be explored. M. Pierre Montet, the excavator of Byblos, is to be in charge. It is expected that much light will be thrown on the Hyksos period and on the sojourn of the Hebrews in Goshen. The city declined in importance when the river which flowed by it ceased to be a main waterway ; and the surrounding country, which in ancient times was rich pasture ground, is now salt marsh and lake. (*Scotsman*, 30 May).

According to latest reports from Nuzi, in Iraq, where a joint expedition of Harvard University and the Baghdad School has been excavating under Mr R. F. S. Starr, director, several interesting and important finds have been made belonging to the Iron Age (from 1200 B.C.). The inside walls of one room have been found to have been richly decorated three times in colour, the first paint being on the mud bricks themselves, and the two redecorations on a thin plaster spread over the older paint. The colouring includes the conventional Nuzi special design in red, black, and grey. (*Scotsman*, 4 July).

The third campaign has now been commenced at Tell Beit Mirsim, which is supposed to be the Biblical Kirjath-sepher (' the city of books '). Recent discoveries, such as those of the stele of the serpent-goddess, found in the fourth stratum from the top (1600 B.C.), and the seal impression of Eliakim, servant of Joiachin (Yokin), belonging to the year 597 B.C., give reason to expect equally important ones in the course of this third campaign. It has been conjectured from the name Kirjath-sepher (also called Debir) that old archives were kept here. (*Scotsman*, 4 July).

Professors Lake and Blake, of Harvard University, and Professor Butin, of the Catholic University, have gone on an expedition to the Sinai Peninsula in search of more proto-Sinaitic inscriptions. A note from Professor Butin from Beirut (dated 4 April) reports a successful trip with the discovery of twelve new fragments of the ancient script, and also many Egyptian inscriptions. (*Scotsman*, 4 July).

The prehistoric collections of the British museum have been enriched by an early Celtic chieftain's outfit of a gold torc and pair of bracelets, which resemble a set found near Bingen on the Rhine and datable to about 380 B.C. This set shows an attempt by the Celtic goldsmith to imitate the classical palmette. It will be remembered that Titus Manlius Torquatus took a torc in battle from a Gaul in 361 B.C., thence deriving his name Torquatus.

A reader in Assam writes :—

'On page 51 of your March issue Dr Curwen finds it strange that Neolithic pots should have had round bottoms. I mentioned this to a friend, who pointed out the great majority of earthen-ware or brass pots made in this part of India and likely to be used over a fire are furnished with round bottoms. Wood and reeds are practically the only fuel used, laid flat on the ground or in a very shallow depression. Three stones or lumps of earth, or three pegs of green wood support the cooking utensil over the fire, and naturally the rounded bottom fits between the supports right down on top of the fire, a convenience when cooking is carried on in the open air without protection from draughts '.

Some Recent Articles

This list is not exhaustive but may be found convenient as a record of papers on subjects which are within the scope of ANTIQUITY. *Books are occasionally included.*

Die Gliederung des Eiszeitalters in Europa, by Fritz Machatschek. *Wiener Präh. Zeitschrift*, 1930, XVII, 1–16. Bibliography of 47 references.

Beiträge zur Kenntniss der Aurignacienkultur Bessarabiens und der Bukowina, by Czeslaw Ambrozewicz. *Wiener Präh. Zeitschrift*, 1930, XVII, 17–45. Fully illustrated and documented.

Offa's Dyke: a field survey; fifth report: Offa's Dyke in the mountain zone, by Cyril Fox and D. W. Phillips. *Arch. Camb.* 1930, LXXXV, 1–73.

A further instalment of Dr Fox's admirable and methodical survey, which is now rapidly nearing completion.

The Roman legionary fortress at Caerleon in Monmouthshire: report on the excavations carried out in the eastern corner in 1929, by Christopher Hawkes. *Arch. Camb.* 1930, LXXXV, 144–96.

The excellent work being done on the Welsh marches needs no commendation to readers of ANTIQUITY. Mr Hawkes's report is a model of thoroughness and lucidity; and is an example of the kind of results that can be obtained by modern scientific excavation.

Some aspects of the post-glacial history of British forests, by G. Erdtman (University of Stockholm). *Journal of Ecology*, Feb. 1929, XVII, 112–26.

A probable source of the material of some Wiltshire prehistoric axe-hammers, by G. H. Engleheart. *Wilts. Arch. Mag.* 1930, XLV, 73–4.

Suggests that some of them were made from the pebbles of Chesil Beach, a shingle-bank extending along the southwest coast of Dorset from Bridport to the Isle of Portland. Good evidence is cited in support.

Probleme der ägyptischen Vorgeschichte, by Fr. W. Freiherrn von Bissing. *Archiv für Orientforschung*, 1928–9, V, 49–81.

Treats of the alleged dependence of Egyptian upon Sumerian civilization and concludes that it is illusory. His conclusions will be contested.

[*The following are selected from a list published in* THE AMERICAN JOURNAL OF ARCHAEOLOGY, 1930, XXXIV, 198—*where short summaries are given. The titles given here are descriptive only*].

Chronology of the Age of Hammurabi according to the latest investigations, by J. B. Schaumberger. *Biblica*, 1929, X, 332–62.

The following dates, based upon the observations of the planet Venus recorded in a document of Ammizaduga's reign, have been suggested for the beginning of the reign of Hammurabi :—2123 B.C. (Scheil, 1912) ; 1947 B.C. (Kugler) ; 1955 B.C. (Weidner) ; 2003 B.C. (Schoch and Thoreau-Dangin) ; 2067 B.C. (Langdon, Fotheringham and Schoch). Schaumberger supports the date 2067 B.C. by a mass of astronomical and historical evidence, and regards it as now definitely established.

Whence came the Sumerians ? by G. A. Barton. *Jour. Amer. Oriental Society*, 1929, XLIX, 263–86.

The author thinks that the Sumerians were descended from dolichocephalic men of palaeolithic times, who had survived in some mountain fastness far from the Hamitic-Semitic centre and had developed an entirely different language. Oman is suggested.

The Habiri of the El Amarna tablets and the Hebrew conquest of Palestine, by G. A. Barton. *J.B.L.*, 1929, XLVIII, 144–8.

The archaeological and biblical evidence agrees in suggesting two Hebrew invasions of Canaan, one in the period of the El Amarna letters, the other about 1200 B.C.

Recent discoveries at Jerash, by J. W. Crowfoot, Director of the British School of Archaeology in Jerusalem. *Discovery*, April 1930, 107–110.

The Underground Cisterns of Constantinople, by S. Casson. *Architectural Review*, October 1929, pp. 167–71. 11 illus.

An interesting account of a curious subject. Mr Casson describes how he and Professor Tilley discovered a new cistern by descending a well on a rope-ladder.

Air-photography : part I. Organization and training (1*s* 3*d*) ; II. Theory and practice (4*s*). Air Publications, nos. 1354 and 1355. H.M. Stationery Office, 1929.

An engraved bronze mirror from Nijmegen in Holland, with a note on the origin and distribution of the type, by G. C. Dunning. *Archaeological Journal*, 1930, LXXXV, 69–79.

' The origin of British mirrors is traced from a Greek prototype imported into the Celtic area in the 5th century B.C., probably along a trade-route from Massilia. Their development fits into the scheme for Celtic coins and other objects summarized by

Déchelette (*Manuel*, II, 1560): (1) importation of Greek prototype along trade-route (2) copy, at first exact, of this prototype by a native craftsman (3) transformation into Celtic style (4) degeneration '. Mirrors illustrating each of these four stages are dealt with ; their distribution is shown by a sketch-map and schedule of finds, consisting of 20 instances ; and a Romano-Celtic cultural connexion is demonstrated between Britain and the Rhineland. An important paper.

The Glacial conditions and quaternary history of North-east Land, by K. S. Sandford. *Geographical Journal*, December 1929, LXXIV. Offprint with separate pagination illustrated by oblique air-photographs, not all of them equally instructive.

The early castles of Mar (first paper) ; by W. Douglas Simpson. *Proc. Soc. Ant. Scot.* LXIII, 102–38.

Socketed and looped Iron Axes from the British Isles, by Herbert N. Rainbow. *Arch. Journ.* (published February 1930) LXXXV, 170–75.

The writer was lucky enough to pick up one of these axes on the foreshore of the Thames opposite Sion Park. His remarks on them are of considerable interest. Only eleven have been found in this country, and there can be little doubt that the type, obviously modelled on the bronze prototype, was soon superseded by the form more suited to the material.

Homer's use of the Past, by H. L. Lorimer. *Journal of Hellenic Studies*, XLIX, part 2 (1929) issued in February 1930, pp. 145–59.

A most interesting study, showing that Homer wrote of things that had passed out of use at the time he lived. The conclusions reached agree with the view, generally accepted on other grounds, that the Homeric epics represent the culmination of a literary cycle whose earlier products have all been lost. That the Iliad contains an echo of still earlier conditions is suggested by Dr Curwen in ANTIQUITY, IV, p. 50.

Alte und neue Ziqqurat-Darstellungen zum Babelturm-Problem, by Theodor Dombart. *Archiv für Orientforschung*, 1929, V, 220–29.

The Anatolian Goddess Kubaba, by W. F. Albright. Ib. id. pp. 229–231.

Transactions of the Cumberland and Westmorland Antiquarian and Archaeological Society. New series, volume XXIX, 1929. Editors : R. G. Collingwood, T. H. B. Graham, W. T. McIntyre. 303 pp.

This volume, a model of its kind, contains a number of good articles, several of them by the Editors. Perhaps the most valuable contribution is the one by Mr R. G. Collingwood on ' Roman Signal Stations on the Cumberland coast '. Mr Collingwood records the evidence, and his argument is set out with great clearness. He does not claim to have said the last word ; but the evidence is convincing, so

far as it goes, and, as he says, the very smallest amount of excavation would be decisive in a large number of cases.

There is a report on excavations on Hadrian's Wall in 1928 by Mr Richmond, and articles of that valuable topographical kind which has been such a feature of the *Transactions* in the past. We wish that other local societies would devote more attention to work of this kind.

Zur geschichte des Kamels in Nordafrika. *Petermanns Mitteilungen*, 75 jahrgang, hefts 11–12, 1929, p. 307.

This is a subject of obvious interest to archaeologists and historians. The date of the first appearance of the camel in Africa is clearly important in connexion with rock-carvings representing it.

The British Museum Quarterly, 1929, volume IV, no. 2, pp. 29–61, plates XV–XXXVI.

The outstanding feature of this number is shown on plate 24, which illustrates two neolithic Chinese vases of extraordinary interest and beauty. They have been presented by the Stockholm Museum. They were excavated by Professor Andersson in Kansu.

Some Welsh Wood-Turners and their Trade, by Iowerth C. Peate; reprinted from *Studies in Regional Consciousness and Environment*—essays presented to H. J. Fleure, D.SC., F.S.A. Oxford, 1930.

An excellent account of the immemorial craft of Pembrokeshire and Cardiganshire. There is an admirably illustrated description of the primitive pole-lathe used until recently; and also photographs showing the similarity—or identity— of form with the skimmers, bowls and spoons of the Swiss Lake Dwellings. J.P.W-F.

An outline of recent Japanese archaeological research in Korea, in its bearing upon early Japanese History, by G. B. Sansom. *Trans. Asiatic Society of Japan*, December 1929, VI, 5–27, illustrated.

Opens with references to the two neolithic cultures of Japan, the Aino and the Yayoi, and refers to Professor Torü Ryūzū (who has been engaged in Korea since 1912) who states in his work *Yushi izen no Nippon* (1927) that neolithic sites in Korea reveal in their contents a very strong resemblance to the Yayoi types in Japan and South Manchuria and the Maritime Province of Siberia but not China. The later Chinese influences of the Chou Dynasty and the Hau periods are dealt with. W.M.

Les alignements de Carnac (Morbihan), by Alexandre Baschmakoff. *L'Anthropologie*, 1930, XL, 37–75.

The place of honour, as regards length, is given to this article. Déchelette has said that of the abundant speculations on Carnac the great majority 'se classent dans le fatras des écrits que l'on nomme le roman préhistorique'. From this category it is impossible to exclude M. Baschmakoff. Twelve visits to Carnac have left him inaccurate in description and plans. He describes and draws the stone-rows as parallel, whereas they increase fan-wise in width from east to west, *e.g.* at Kerlescant

from 198 to 330 feet. He knows nothing of the rows on Dartmoor or in Caithness. He classes Stonehenge with Carnac because its lines are parallel though circular, and 'its several parts had separate functions' (?) He dilates with evident sympathy on the ridiculous belief that the Carnac rows were erected as a military defence against an invader from seaward, but decides that they represent the companies and brigades of the prehistoric inhabitants assembled, and the well-known and undecipherable 'shield' inscription of Mané-er-Hroech is a proclamation to them (though it stands in the pitch-dark interior of the tomb) that they are the descendants of the snake, the bull and the ram ! G.E.

The following list of recent articles on early man in China has been kindly sent to us by Dr Davidson Black, of the Department of Anatomy, Peking Union Medical College. Since their publication the important discovery by Dr Black of a second *Sinanthropus* skull has been announced. (*Daily Telegraph*, 31 July).

(1) Tertiary Man in Asia. The Chou Kou Tien discovery. *Nature*, 20 November 1926, pp. 733–4. (Brief announcement of first discovery of hominid teeth). Id. *Science*, 17 December 1926, pp. 586–7.

(2) On a lower molar hominid tooth from the Chou Kou Tien deposit. *Palaeontologia Sinica*, Series D, vol. VII, fasc. 1, November 1927. pp. 1–28, plates 2 and text figures. (New hominid genus *Sinanthropus* described and defined).

(3) Further hominid remains of Lower Quaternary age from the Chou Kou Tien deposit. *Nature*, December 1927, p. 954. (Brief notice of material described in preceding paper). Id. *Science*, February 1928, pp. 135–6.

(4) Preliminary note on additional Sinanthropus material discovered in Chou Kou Tien during 1928. *Bull. Geol. Soc. China*, VIII, April 1929, pp. 15–32, 5 plates and text figures.

(5) *Sinanthropus pekinensis* : further note on new material recovered at Chou Kou Tien in 1928 and its zoogeographical significance. *Proc. Fourth Pacific Science Congress*, Bandoeng, Java, 22 May 1929.

(6) *Sinanthropus pekinensis* : the recovery of further fossil remains of this early hominid from the Chou Kou Tien deposit. *Science*, 28 June 1929, pp. 674–76, and text figures.

(7) Preliminary report on the Chou Kou Tien fossiliferous deposit, by P. Teilhard de Chardin and C. C. Young. *Bull. Geol. Soc. China*, 1929, VIII, 173–202.

(8) Preliminary notice of the discovery of an adult *Sinanthropus* skull at Chou Kou Tien, by Davidson Black. Ib. id. 207–9, 9 plates.

(9) An account of the discovery of an adult *Sinanthropus* skull in the Chou Kou Tien deposit, by W. C. Pei. Ib. id. 203–5.

(10) Interim report on the skull of *Sinanthropus*, by Davidson Black. Ib. id. 1930, IX, 7–10. 6 plates giving views of the skull fully disengaged from its matrix.

La Industria de la pièdra en Monte Hermoso, by J. Imbelloni. *Anales de la Facultad de Ciencias de la Educacion*, II, 147–68. Universidad Nacional del Litoral, Parana, Republica Argentina.

The palaeo-ethnological results of the expedition of the University to the Argentine Atlantic coast in 1924 are examined. No human remains were found but there is an account of the stone implements. G.C.W.

Clava-insignia de Villavicencio, by J. Imbelloni. Ib. id. III, 219–28.

A fresh example, found in America, of the oceanic 'mere', this being a basalt club now in the Chilian Ethnological Museum found many years ago in the Mendoza mountains, Argentina. G.C.W.

Un arma de Oceania en el Neuquen, by J. Imbelloni. *Humanidades* (Buenos Aires), XX, 293–316.

Discusses a basalt axe found at Chubut, and now in a private collection in Buenos Aires, which is described as 'American specimen of a product of the culture of the Pacific peoples, in particular of the Maori-Moriori group'. G.C.W.

Atti del XXII Congresso Internaz. degli Americanisti, Rome, 1928.

There are three papers by J. Imbelloni. The first, 'Intorno ai crani "incredibili" degli indiani Natchez' criticizes in connexion with Natchez skulls the methods that have been used in the study of artificial deformation. In the second, 'Le relazioni di parentela dei popoli Andini seguono il "sistema classificatore" proprio degli Oceanici' he links Andine kinship terms with those of Oceania. The third, 'L'idioma Kichua nel sistema linguistico dell' Oceano Pacifico' discusses the kinship between Kechua and the Oceanic languages. G.C.W.

El Origen de la Columna de Tipo Mediterranes, by J. Martinez Santa-Olalla. *Ipek*, 1929, pp. 35–45.

Describes 'the oldest-known columnar structures with the Mediterranean column', which are to be found in the Balearic isles, where cultural development was long arrested at the late Bronze Age level of the original immigrants: the rude central columns supporting the vaults of certain Minorcan *navetas* are claimed to be the prototypes of the columns of Knossos and Mycenae. R.A.

Iberische Prunk-Keramik vom Elche-Archena Typus, by H. Obermaier and C. W. Heiss. *Ipek*, 1929, pp. 56–73.

A detailed description of selected Iberian grave-pottery from the Heiss collection in Madrid. The bird and the beast of prey, of which Bosch says that they are ' the two classic animals of the Elche school ', are the living elements in the ornamentation, which is otherwise geometric or stylized, with the S-motif and concentric semicircles in bands, and with stylized plants, even a stylized fish. R.A.

Iberische Steinskulpturen, by H. Kühn. Ib. id. pp. 74–8.

Insists on the continuity of the art of the Cerro de los Santos sculptures with the Iberian art of the Neolithic and Bronze Ages. The Greek influence, purely technical and external, fails to touch the inner spirit of an art which is to the end geometric, almost two-dimensional, relying on the line and the external contour (*Umgrenzung*) as means of expression, and maintaining the frontal pose with symmetrical treatment.

Kühn denies the Roman influence alleged by Carpenter for some of the male statues. R.A.

Aperçu sommaire sur les Industries Lithiques du Maroc central, by M. Antoine. *Bull. Soc. préh. Maroc*, 1930. 4me année, no. 1, 29–49.

Too little is known about the Stone Age in Morocco. This article is therefore very welcome. Mention is made of the occurrence of Chellean, Acheulian, Mousterian, post-Mousterian, and Neolithic industries. It is to be hoped that the author will bring out a large work on this interesting area later on and that he will not try to follow too slavishly the French sequence of cultures. Why for example should a post-Acheulian industry in Morocco be classed as Mousterian merely because the tools are made of flakes, when there is no proof that Neanderthal man ever visited the country? Similar flake industries occur in many parts of Africa, until superseded by ' blade and burin ' industries. But after all what is needed today is exploration ; so good luck to Prof. Antoine in any further investigations he may be contemplating. M.C.B.

Jericho : Sir Charles Marston's expedition of 1930, by Prof. John Garstang. *Quarterly Statement of the Palestine Exploration Fund*, July 1930, pp. 123–132, 10 plates, including plans and sections across the site.

A re-examination of Jericho in the light of the advances made in Palestinian archaeology was urgently needed. When the site was excavated by the Germans 20 years ago, but little was known about Palestinian pottery, and the exact dating of strata was naturally difficult. The results of the present excavation showed that ' the city was destroyed, in round figures, about the year 1400 B.C., just before the infiltration of Mykenaean wares began '. The destruction took place *before* the deposition (in a known stratum) of a Late Minoan III pot which ' cannot be earlier than 1350 B.C. and possibly dates from the 13th century, towards the time of the Philistines ' (Dr H. R. Hall, on p. 122). This is a most satisfactory outcome of an admirably conducted and really useful dig.

Reviews

EXCAVATIONS AT TELL EN-NASBEH, 1926 AND 1927. *A preliminary report. By* WILLIAM FREDERIC BADÈ. *Berkeley, California*, 1928. *pp.* 56, *with* 26 *illustrations.* 1 *dollar.*

THE EXCAVATION OF ARMAGEDDON. *By* CLARENCE S. FISHER. *University of Chicago Press*, 1929. *pp.* XIII, 58, *with* 53 *illustrations.* 1 *dollar.*

In comparison with the returns from excavations on early sites elsewhere in the Near East, archaeological work in Palestine has been generally disappointing. On every site, with the two exceptions perhaps of Beisan and Samaria, there has been a curious poverty of written records in all periods before the Hellenistic. Happily there is no sign yet that their meagre rewards have discouraged diggers from prosecuting further researches, and the preliminary reports above mentioned are two of the welcome evidences of recent activity.

Tell en-Nasbeh is a prominent landmark about 7 miles north of Jerusalem, close to the main road to Nablus and Galilee. It has been identified with Mizpah of Benjamin, but this identification, though warmly endorsed by Dr Badè, is by no means generally accepted. An expedition, sent by the Pacific School of Religion in Berkeley, California, under the direction of Dr Badè, has been working here for three seasons, in 1926, 1927 and 1929, and the pamphlet before us is a preliminary report on the work of the first two seasons.

The most impressive discovery made was that of the city wall on the south side of the site. This wall was still standing with three great bastions some 25 feet high in places ; ' the horizontal diameter of the wall, tower and revetment on top was twenty-nine feet, and by estimate about thirty-five feet at the bottom ' (p. 19). It belongs to the Middle Bronze Period, say from 2000 to 1800 B.C., and compares favourably in size and preservation with any that have been previously found in Palestine. The wall was built of undressed blocks laid in clay mortar and was found ' covered, to a height of fifteen or eighteen feet from the bottom, with a thick coating of hard yellow plaster '. To the best of our knowledge this plaster is unique : Dr Badè suggests that the wall was plastered to make it more difficult to climb. The wall cannot have been less than forty feet in height originally and Dr Badè is justified in quoting from Deuteronomy (1, 28) : ' the walls of these cities reached unto heaven '.

His account of a rectangular building within the city, which he identifies with an Israelite ' high place ', carries less conviction, in spite of the ingenious interpretations of various objects found on the spot which he puts forward.

Criticism will also be aroused by his description of two early tombs as pre-Semitic. For some years archaeologists in Palestine have abandoned the old ethnic labels which were used by Macalister and others in earlier days, feeling that the evidence did not warrant this employment. Dr Badè found in these tombs some painted pots similar to those found by Captain Parker on Ophel (see Vincent, *Jérusalem sous terre*) and also a

series of double cups—small cups inside larger ones to the rims of which they are attached —which have not been found previously. With these were found some human remains, and it is unfortunate that Dr Badè has given an ethnic label to the pottery before these crania have been properly studied.

Dr Fisher's account of the excavations at Megiddo is one of a series of 'Oriental Institute Communications' which are written in a popular style for the general reader.

The actual excavations described in this bulletin were confined almost exclusively to the two uppermost strata on the *tell*, and a miscellaneous series of tombs, ranging from about 2300 B.C. to about A.D. 400, on the side of the hill where it was decided to shoot the spoil from the top. During the period covered by the later strata Megiddo was 'a mere fortified post along the highway and not a great walled-in city', so it is not surprising that the finds in those levels were of no great importance.

The account of the finds, however, takes up only two of the six chapters in this report. The rest is devoted to an excellent account of the topography of Megiddo and its place in history, the organization of the expedition and the field-methods adopted. The funds for the work have been provided on a generous scale by Mr John D. Rockefeller junior, and the excavation promises to be one of the most elaborate and systematic ever conducted in the Near East. Dr Fisher has written an admirably lucid and objective description of his aims and methods, and we devoutly hope that some epigraphic records may be found in the lower levels of the *tell*. A small fragment of a stele set up by Shishak, which was found on the surface by workmen in search of building material, is rightly regarded by Dr Breasted, who contributes an introduction to this report, as a good augury. J. W. CROWFOOT.

A SUMERIAN PALACE AND THE 'A' CEMETERY AT KISH, MESOPOTAMIA. *By* ERNEST MACKAY. Field Museum Anthropological Memoirs, vol. 1, no. 2. *Chicago*, 1929. *pp.* 143 *with* 42 *plates*. $3.50.

The disinterment of early Sumerian civilization by Anglo-American enterprise is the most important archaeological event of post-war years. The work of excavation is proceeding apace, but publication lags dangerously behind. Excavators, competent to tackle the bewildering intricacies of mud brick walls and pavements, are rare, and their time is kept fully occupied. The mound covering the archaic Sumerian palace and later, but still archaic, Sumerian graves, described in this memoir, was explored by the joint expedition of Oxford University and the Field Museum, Chicago in 1923–5. Some of the graves were fully described by the author in the first part of this memoir (which is paginated as a continuation of that publication) in 1925. Since then Mr Mackay's expert services have been engaged elsewhere—a fact which presumably explains the delay in publishing the present volume, the absence therefrom of all reference to the discoveries at Ur, mis-prints and false citations in the text, the omission of the 'skeleton plan' (plate XXII which should, according to the text,* contain it is, in fact, evidently a continuation of the inconveniently bisected plate XXI), and other indications of hurried writing (barbarisms such as 'employing the use of a pair of animals to draw it').

The palace, the oldest known secular building of the Sumerians, was in a sadly ruined state. It was largely built of unburnt brick and had been sacked; other buildings

* Dr Mackay has told us privately that proofs were not sent to him in India, so he is not responsible for many of the errors.—ED.

had been erected on its site, and at some time or other graves had been dug in the heap of ruins. The excavators' task was accordingly one of appalling difficulty. But just for that reason we should have liked more data to enable us to control their interpretations of this unique monument of remote antiquity. But there is nothing to show the position of the secondary constructions and graves in relation to the original palace—such indications were apparently to have been given in the missing skeleton plan. Again there are lettered sections of the palace—only—but no indications on the plan of the lines of section. Moreover we are left in doubt whether the site has yet been thoroughly explored, the excavators even stating that ' remains of this (hypothetical earlier) period may even now exist below the palace '.

The palace as described was a complex, built at two not widely separated periods. Of the first phase the principal structure that survives presents many of the features of a fortress. It was girt with an outer wall 3.50 m. thick and strengthened with buttresses described elsewhere as towers though they project only 15 cm. from the wall face. Inside came a corridor described by the excavators as a kind of fosse between the outer and inner lines of defence. The internal edifice comprised a court yard and a complex of small chambers, none very palatial. A more imposing building of like age lay to the east, but all that remains of it is a fine stairway and the bases of flanking buttresses, elaborately recessed, like the façades of Old Kingdom brick *mastabas*. This stairway was replaced by a ramp when the later annex was added (though in the reconstruction it is shown in its pristine beauty side by side with the new building !). In the latter we meet the celebrated colonnade of brick pillars, illustrating an ancient architectural tradition early abandoned on the alluvial plain of Shinar.

While probably the oldest and certainly the most striking examples of Sumerian secular architecture, the age of these structures is not so easy to settle ; for relics were as sparse as in an Irish rath. Certainly contemporary with the pillared building were the fragments of a shell and limestone frieze, including one very remarkable figure of a bearded king, but certainly allied to the inlay from the small first dynasty temple at Al'Ubäid. But with these went fragments of iron—apparently a nail. In another room of the same building was found a stone tablet inscribed with pictographic characters. But Mackay warns us that this document, regarded as the oldest piece of Sumerian writing extant, may be very much older than the palace. Other objects, such as a transverse axe, seem to have fallen down the drains of the later buildings.

But the graves, embedded even in the wall stumps of the palace, must be substantially later than it; yet their furniture is very archaic. The types therefrom point on the whole to the pre-Sargonic period (before 2750 B.C.). For instance nearly every grave contained one of those large pedestalled bowls (Woolley has pointed out that Mackay's interpretation as braziers is untenable), so characteristic of the earliest tombs at Ur but missing in the Sargonid graves there and the Ur I graves at Al'Ubäid. The stone vessels and shell lamp (falsely labelled a beaker) are again paralleled in early finds from Ur. On the contrary many copper implements, including axe-heads, from Kish A had been cut out of sheet copper, not cast. Woolley at Ur expressly states that this primitive technique is peculiar to late, i.e., Sargonid, graves. Such a contradiction is a salutary reminder of the uncertainties which still beset the chronology of the early Sumerian period. The first step towards remedying it is the full publication of accurately excavated material. From this standpoint, if from no other, the present volume is indispensable; for it is clear enough that Dr Mackay carried out his gigantic task with triumphant skill and painstaking accuracy.

V. GORDON CHILDE.

THE HERBERT WELD COLLECTION IN THE ASHMOLEAN MUSEUM. Pictographic Inscriptions from Jemdet Nasr excavated by the Oxford and Field Museum Expeditions.* *Oxford editions of Cuneiform texts, vol.* VII. *Oxford University Press,* 1928. *pp.* VIII, 72, *with* 41 *plates.* 10*s.*

Professor Langdon's publication of the semi-pictographic tablets found by him at Jemdet Nasr in 1926 is an important contribution to the archaeology and history of the archaic period of the lower Euphrates valley. Before this discovery less than a dozen texts of equal antiquity were known. Jemdet Nasr has yielded nearly 200, and some others, certainly leakages from the excavations, have been acquired by purchase by the Louvre and the British Museum.

By comparing the signs inscribed on these tablets with those of slightly later date from Fara, the author has been able to compile a list of 463 archaic signs, to establish an analogy with 168 Assyrian signs, and to check the identifications already made by means of these primitive photographs.

A still more important achievement is that he has proved the language of these texts to be Sumerian. At Jemdet Nasr then there were Sumerians settled in the midst of the primitive population, which latter is distinguished by its painted pottery and stone implements.

Professor Langdon rightly calls attention to another discovery of no less interest, for it is a fresh proof of the growth of intercourse between the different racial groups at the beginning of the historic period. The engraved documents found at Jemdet Nasr, whether tablets or seals, closely resemble, both in subject matter and execution, the archaic documents found at Susa ; there must therefore have been a close cultural connexion between these two places.

It would perhaps be going too far in the present state of knowledge to agree with the author's conclusion, from these and other facts, that Sumerian civilization came to Mesopotamia by way of Elam ; that it was first established in the region later called Akkad ; and that from there it spread southwards as far as the Persian Gulf. The certain facts are still too scattered to justify such a generalization.

This fine monograph makes one hope for early publication of the archaeological material found at Jemdet Nasr in 1926 and 1928—the painted pottery, domestic objects and seals. L. DELAPORTE.

PRELIMINARY EXCAVATIONS AT TEPE GAWRA [near MOSUL]. *By* E. A. SPEISER, *University of Pennsylvania. The Annual of the American Schools of Oriental Research, vol.* IX *for* 1927–1928, *pp.* 17–94, *with* 135 *figures including plans of site. New Haven : Yale University Press,* 1929.

This is a good example of valuable results obtained in a short time for a small outlay. Tepe Gawra is a mound about 2 miles east of Khorsabad. Excavations carried out by Dr Speiser and his colleagues in 1927 revealed three culture-layers, of which the first two were prehistoric (yielding painted pottery). To the layman the most interesting part is that (on pp. 50 and 51) giving Dr Speiser's own views about the succession of events in the home of civilization. We quote them in full :—

' The earliest observable movement brings the Painted Ware Culture from the northern highlands, in which it most likely originated, down to the head of the Persian

* Review translated by the Editor.

TEPE GAWRA, BETWEEN MOSUL AND KHORSABAD, TAKEN 14 FEBRUARY 1928

By permission of the Trustees of the British Museum

facing p. 382

Gulf. This "Proto–Zagros" civilization established the first settlements at Gawra as well as in the south.

'As the accumulating silt of the Two Rivers kept on adding to the inhabitable area of the fruitful plain, stone-using Semites from North Arabia, and possibly also from the West, gradually found their way to the newly opened low-lands; the northern invasion is checked by a counter-movement from the opposite direction. The highlanders are constantly pushed back towards their mountains until the entire region is cleared of them as far as the foothills of the Zagros.

'In the meantime the fame of the fruitful lands in the narrow and elongated channel between the Tigris and the Euphrates brings to the country a third racial group, the Sumerians; who come a longer distance, probably by sea, and drive in a wedge, so to speak, between the warring elements of north and south. That wedge does not penetrate beyond the Middle Euphrates, where the contest between the Semitic "Amorites" and the "Anatolians" continues uninterrupted down to the second millennium. But Lower Mesopotamia undergoes a profound transformation. Metal and writing make their appearance and the Sumero–Akkadian civilization slowly emerges into the full light of history. So powerful is this combination of old and new resources that it sweeps before it everything on the way to Asia Minor and the Mediterranean. A score of centuries later the period of "The King of Battle", now a Heroic Age, embellished by legend, still excites wonderment and admiration'.

LONDON IN ROMAN TIMES. *By* R. E. M. Wheeler, with contributions *by* T. Davies Pryce, T. V. Wheeler *and* E. B. Birley. *London Museum Catalogues, no.* 3. *Lancaster House, St. James's, S.W.* 1. 1930. *Paper covers* 2*s.*, *bound* 2*s.* 6*d.* *pp.* 211, 61 *plates* (*including* 2 *maps*), *and* 58 *figures in text.*

It has been stated on good authority that this is the best museum catalogue of its kind that has ever been written. We entirely agree. It is yet one more proof that wide learning and scholarship and a good style, so far from being incompatible, are a necessity for the writer of a popular guide-book. We fancy that the secret of Dr Wheeler's remarkable output of first-rate books is to be found in the speed with which they are conceived and composed; that they are envisaged as a whole before they are begun; and that they are finished before the iron has time to cool. That may also account for the fact that they are readable.

The present book is both catalogue and guide. It is divided into prologue, catalogue and epilogue. The prologue is a short history of Roman London, the epilogue ('On the Significance of Roman London') a brilliantly composed picture of it; the parts in between consist of the catalogue (of the best kind, fully illustrated) well seasoned with descriptive matter. The various objects dealt with are grouped together under such headings as structural remains, sculpture, inscriptions, lighting, surgical and toilet instruments, metal vessels and pottery. Amongst the most attractive of the objects is a bronze foot rule. The famous ship, found when the County Hall, near Westminster Bridge, was being built, is very fully described.

There is a fascinating map showing Londinium in its natural environment of forest, marsh and gravel heath (still surviving at Hounslow, Hampstead, Wimbledon, and Blackheath); and another of the town itself on a larger scale.

Dr Wheeler deplores the opportunities neglected in the past for organizing the preservation and record of antiquities found during deep excavation in the City. By

the expenditure of a few hundred pounds a year on the salary of an expert to watch and draw sections, this might have been avoided. When will the British public learn that it is not only *what* you find but *where* (vertically and horizontally) that matters ; that these finds are the tokens of history and of no other value whatsoever (unless works of fine art) ?

We advise all our readers to buy this book. There can be few who will not find something in it of interest, for everyone has heard of London, even our remotest readers in China and Central America. We commend it also to the notice of provincial museum curators, especially those who have left undone the things which they ought to have done ; and the curators, if such exist, of certain dreary charnel-houses in the more backward States of Europe. May it at least shame them into writing a few labels.

THE COMMERCE BETWEEN THE ROMAN EMPIRE AND INDIA. *By* E. H. Warmington. *Cambridge University Press*, 1928. 15*s. net.*

Mr Warmington has written a very valuable study of a difficult subject whose importance has, on the whole, not been sufficiently recognized in the past. Threading his way through masses of details, the most important of which are the references in classical literature to Eastern products, and the Roman coins found in India, he comes to the conclusion that the crucial event for the history of this trade was the discovery—made by Hippalos, in the reign of Claudius—that the monsoons permitted of a direct passage between Cape Guardafui and the Tamil states of Southern India. This discovery cut out the long coasting voyage and greatly facilitated the work of navigation. The result was a rapid increase of trade ; but this was followed by a decline in the third century, due to a decline in the purchasing power of the Roman Empire. This general outline is complicated by the fact that, in Ceylon, Roman coins only begin to appear freely in the fourth century, showing that in that direction Roman trade expanded at a late date ; earlier, Mr Warmington suggests, Ceylon was only tapped through the mediation of Southern India. Another complication arises from the fact that coins of the fifth century are not rare in India, at a time when, owing to the decay of the Roman Empire, commercial relations might be expected to have ceased.

There are a few points where further explanation would have been welcome. The statement that mariners using the northwest monsoon ' could by throwing the ship's head off the wind with a constant pull on the rudder [? helm] and a shift of the yard (thus sailing in an arc of a circle) go across to Malabar marts in forty days ' is difficult to understand. You can keep a course in a steady wind, even if you have no compass, by keeping the wind (for instance) two points on the starboard quarter ; and that will entail, since most vessels carry weather helm, putting your helm to starboard and keeping it there. But this does not mean sailing in an arc of a circle : on the contrary, it is the only means of sailing in a straight line—a line as straight as spherical trigonometry will allow you. Again, Mr Warmington quotes Lucian's story of a ship 180 feet long which carried enough wheat to last Attica for a year ; but we should have welcomed an estimate of Lucian's margin of error, remembering that a vessel of that length might in point of fact displace 1,500 tons or more and might be equal to carrying about 1,000 tons of wheat—enough to feed only a very few thousand people for a year. And where is Olok, which is mentioned three times ? Can it be a slip of the pen for Obok, the capital of French Somaliland ?

R. G. Collingwood.

REVIEWS

HELLAS REVISITED. *By* W. Macneile Dixon. *Illustrated by* Mary R. L. Bryce. *Arnold*, 1929. *pp.* 209 *with* 16 *illustrations and* 2 *maps.** 10*s.* 6*d.*

The Regius Professor of English Literature in the University of Glasgow here gives us a book of travel which he desires us to regard neither as a guide-book nor as a piece of scholarship : yet it is a book which all who go to Greece should take with them to supplement and enliven their Baedekers, and it is redolent of its writer's devoted Hellenism. Thus, while it is true to say that we meet with all the obvious literary and historical allusions appropriate to each place described, yet the manner of their introduction is such that we are thankful for their inevitability : Professor Dixon's familiarity breeds no contempt, but a feeling that absence of the familar would leave a sense of loss. He modestly hopes that his book may be a 'signpost to Sir James Frazer's *Pausanias*', and elsewhere confesses to his love for Plutarch's companionship : we would add Professor Dixon and make a trio for our wanderings.

After two preliminary chapters upon the Greek Achievement and the History of Greece, the travels are described in the form of a diary ; but we seem to listen to the casual, yet never trivial or irrelevant, conversation of the travellers on their road. Thus are discussed such questions as the absence of a team spirit among the Greeks, and the growth of professionalism in games ; the superiority of modern physical courage over that of the ancient Greeks ; the mythopœic influence of Greek landscape ; Greek religion (much that is well said here : the discussion of oracles is excellent) ; Greek sense of form in art ; the superiority of the Olympia pedimental sculpture to the Hermes. Mingled with such discourse there is much information about modern Greece : do not all who have made the journey to Epidauros know those dogs ? And we are warned, too, that our nights may be disturbed by the more insidious attacks of ***s. The habits of the mule are set forth in a masterly passage : but it were impertinence to praise the style of a Professor of English Literature ; we can only enjoy it. Nor here should we forget the incidental poems.

One point is noteworthy : Professor Dixon's first period of Greek history is the 'Homeric' ; he therefore takes no cognizance of all that development of which the Trojan War was but the ending. He is, in fact, no prehistorian : thus the writing on the Late Helladic vases at Thebes is called 'Greek' without more ado.

There are a few minor misprints : on pp. 7, 66 and opposite p. 44 ('Sunim') ; on p. 199 τειον should be accented (since in modern Greek this affects the pronunciation) if it is mentioned at all ; but surely it is of the artificial printed language of Athens, and the way to get tea is to ask for 'τσάϊ' ?

The illustrations, from pencil drawings after photographs, sometimes fail (to my mind) to reproduce the peculiar clarity and clean lines of Greek landscape. Perhaps this is due to their medium, or perhaps because they are but copies of copies ; indeed, threefold copies, Plato would say. But they preserve much charm ; the Northern shepherd is true to the life, and long may his kind continue.

The greatest of modern Classical scholars wrote recently in his memoirs that after a visit to Greece he felt himself to be 'for the first time qualified to understand Hellenic history and the Hellenes, and above all, their gods'. This book bears the same testimony ; and it will make all who have not been to Greece long to go there ; and all who have been, to go again.

W. L. Cuttle.

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* We understand that a second impression of this book has already been found necessary.—Editor.

AEGYPTIACA : a Catalogue of Egyptian Objects in the Aegean Area. *By* J. D. S. PENDLEBURY. *Cambridge University Press*, 1930. *pp.* 116, *with* 5 *plates and map.* 15*s.*

Intercourse between Egypt and Greece had, with a few periods of interruption, been lively from the beginning of the age of metals. Immigrants, merchants, mercenaries and raiders brought from the land of the Nile souvenirs and merchandise which they had buried with them in their tombs or offered up to their patron deities. An absolute chronology of the prehistoric periods in the Aegean, and hence also in a large part of barbarian Europe, is rendered possible by this intercourse alone. Yet no one had collected and tabulated as a whole the concrete proofs of these interrelations. Now Mr Pendlebury gives a critical list of 307 objects of Nilotic manufacture unearthed in Greek lands with their context, if any, as well as a brief conspectus of Aegean Bronze Age pottery from Egypt. The best evidence for the crucial chronological questions is thus presented in a form that every interested student can examine for himself. Only a fraction, of course, of the Egyptian imports are really available for dating purposes : some have no context, some no precise date, others are plainly heirlooms like the Old Kingdom vases from Late Helladic graves. The re-examination of the rest might seem at times to disturb our faith in established synchronisms. The Egyptian objects from the famous 'Hagios Onuphrios deposit' belong to the XIIth or even XVIIIth dynasty though the deposit is usually regarded as mainly Early Minoan. Similarly First Intermediate and Middle Kingdom objects are alone represented in the collective *tholos*-tombs of the Mesara whose first use should go back well into the Early Minoan age. Finally a faience vase from shaft grave III at Mycenae is here published as an Egyptian product of the latest XVIIIth or XIXth dynasty though the exclusively L.H.I pottery from the tomb should belong rather to the XVIth century. The Egyptian provenance of this vase is not, however, accepted by authorities such as Dr Hall. Conversely, the sherds from Lahun, published by Forsdyke as Middle Helladic, are here rejected as non-Aegean. For the rest current theories are only confirmed, and the chronology of the Early Iron Age given a little more precision. Five half-tones plates reproduce, generally full size (which despite the unusual sharpness of the photographs is not always quite enough), the more important objects, while maps illustrate their distribution. Rhodes is omitted altogether. It has yielded more Egyptian objects than all the rest of Greece put together, and Pendlebury believes that the island was the principal link between the Aegean and the Nile in the late Mycenaean period. This novel view, by no means the least interesting thing in the book, will be expounded in detail in a separate work.

V. GORDON CHILDE.

THE CLASSICAL MONUMENTS OF ROME AND ITS VICINITY. *By* GIUSEPPE LUGLI, *translated by* GILBERT BAGNANI. *Vol.* I. *The Zona Archeologica. Rome*, 1929. 40 *lire.*

Professor Lugli's *La Zona Archeologica di Roma* is a book that needs no praise. It was published in 1924, and since then all visitors to Rome *cognoscendae antiquitatis* have found in it a guide at once indispensable and sufficient. This translation is not a mere reproduction of the original book ; it has been revised throughout and much new material has been added to it, so that those who have the original will be glad to have the new book as well. Five years have revealed very little in the original book calling for correction, but they have brought to light a good deal of new material, and this has

been added in the form of new paragraphs and new illustrations. Mr Bagnani's translation is satisfactory. It has not the elegance and force of Professor Lugli's Italian, but it is careful and readable, and very seldom fails to represent the exact sense required. The printers must be especially congratulated on producing a book in a foreign language with an almost complete absence of misprints; and the illustrations, many of them from new blocks, are much better produced and more visible than in the first edition. In short, this book will be indispensable, not only as a guidebook for all intelligent visitors to Rome, but for everyone who wants up-to-date and trustworthy information about the topography of the ancient city on a smaller scale than Platner and Ashby's *Topographical Dictionary*.

R. G. COLLINGWOOD.

THE HITTITE EMPIRE: being a survey of the History, Geography and Monuments of Hittite Asia Minor and Syria. *By* JOHN GARSTANG. *Constable*, 1929. *pp.* 364, *with* 53 *plates*, 45 *text illustrations and* 15 *maps and plans*. 25*s*.

This book was begun as a second edition of the author's *Land of the Hittites* (1910). The great increase, however, in material since Hrozný began his decipherment of the Hittite cuneiform documents (*Die Sprache der Hethiter*, Leipzig, 1917) has required the work to be entirely remodelled. The result is an up-to-date account of the whole subject. That it is final, the author himself would no doubt be the last to claim. Much material must still remain to be found by excavation, much that has been found is still unpublished, and much that has been published has not yet been fully studied. Moreover the hieroglyphic 'Hittite' inscriptions still defy all efforts to wring from them the information which they must contain as to the various important sites on which they are found. The work is nevertheless valuable both as reporting progress and as a guide to the large amount of scattered literature on the subject. No one is better qualified than Professor Garstang to undertake such a work. He writes out of the fulness of his heart. He is so familiar with his subject that he can view it as a whole, and can show to his reader the broad general lines on which history has developed. This is especially valuable in the present study, where great events or tendencies are only to be inferred from a number of small indications. Some of the details may be open to different interpretations which it is not possible to discuss here, but it may be questioned in general whether Professor Garstang quite appreciates the perplexity of a reader who is not so well versed in the subject as he is himself, and whether he indicates clearly enough the degree of certainty attained in some of his conclusions. Thus it seems to be assumed that the people of Boghaz-keui (Ḫatti) were of the same race as those who produced the later monuments in the south (Carchemish &c.). That may be so (or it may not) but it cannot be assumed. Again Forrer's views as to the mention of Achæans in Hittite cuneiform texts are not discussed, though it seems in some passages that Professor Garstang accepts them. The fall of Ḫatti (*c.* 1200 B.C.) is assumed to have been due to invasion from Europe, but this can hardly be said to be proved, and in any case is it the whole truth?

The identification of places from similarity of names is dangerous if unsupported by other evidence. Professor Garstang, while inclining to such identifications, is evidently aware of this danger, and for that reason devotes a large part of his book to a discussion of the geography, on which he is an acknowledged authority. Another large part is occupied by a detailed description of the monuments, which is of great value and interest. His elucidation of the sculptured scenes (as at Yasili-kaya) is particularly welcome. At the same time all the monuments are grouped together as 'Hittite',

whereas we should be glad indeed of some guidance in distinguishing what is 'Hattic' (*i.e.*, belonging to the early Northern culture) from the Southern art (and language), which is undoubtedly later.

The illustrations and maps are good, and there is a useful bibliography of the monuments and a general index. The book should be read and re-read by everyone interested in the recent discovery of this department of ancient history. But while we are grateful for this careful collection of material, we want more. It is disappointing to read that an inscribed monument was found on some important site and to have no copy of it, or a copy which is useless for study of the text. While the cuneiform literature of Boghaz-keui is being published (chiefly in Germany) and studied with valuable results for the early period (to 1200 B.C.), very little has been done to promote the study of the hieroglyphic inscriptions, which must be equally important for the later period (9th century and after). The *Corpus* of Messerschmidt contains copies as good as could be got at the time (1900–6), but much has since been discovered which has not been reproduced in any form suitable for study. Will not Professor Garstang increase our obligations to him by editing a complete *corpus* of all known Hittite hieroglyphic texts with really legible and trustworthy copies? A. COWLEY.

THE INVASION OF EUROPE BY THE BARBARIANS: a series of lectures. *By the late* J. B. BURY. *Edited by* Professor F. J. C. HEARNSHAW. *Macmillan*, 1928. 12*s*. 6*d*.

Everyone who is interested in the connecting-links between the Roman Empire and the Middle Ages, and everyone who honours the memory of Bury, must be grateful to Professor Hearnshaw for editing the text of these lectures, given from time to time at Cambridge and containing in a form suited to the lecture-room the main fruits of the lecturer's profound knowledge of the period. The book begins with an account of the Germans and their wanderings, and goes on to narrate the story of their impact upon the Roman Empire in the third century, and the gradual development of the situation to which that impact led. It ends with a description of the Lombard kingdom in Italy. In a book of 300 pages, the innumerable obscurities and controversies which surround these events are necessarily kept out of sight. The intention is to give the author's own view of their results; he would have been the last to claim that his own views were in all cases final, but no one will deny that they are always worthy of the closest attention, and that, as presented here with the informality and ease of a lecturing style, they give the reader a profound sense of the combination of accurate learning and balanced judgment which made Bury a great teacher. The editor has scrupulously preserved the colloquial tone of the lecture notes, and thereby given us an interesting demonstration of the difference between Bury's style as a writer and his style as a speaker; but at the same time it might be thought that his scruples were overdone when he has refrained from correcting such slips as Claudius I for Claudius II (p. 22), Eleusia for Eleusis (p. 70—no doubt a mere misprint), 'as powerful . . . than the Germans' (p. 79), Terouanne for Thérouanne (p. 102), Rhaetia for Raetia (p. 205), Zulpich in the duchy of Ůlich for Zülpich in the duchy of Jülich (p. 239), or euphuism for euphemism (p. 247). But one thing at least is clear: no one can wish, as the friends of deceased scholars too often wish when their unpublished writings are posthumously edited, that these lectures had not been published. On the contrary, they will be an indispensable accession to the library of every student of the period and an additional monument to a great historian.

R. G. COLLINGWOOD.

REVIEWS

EXCAVATIONS AT OLYNTHUS. Part I. The Neolithic Settlement. *By* GEORGE E. MYLONAS. *Baltimore : The Johns Hopkins Press*, 1929. 34*s*

This full report of the prehistoric finds at Olynthus, 'accidental and incidental' though they are called by Professor Robinson in his foreword, is useful and timely, for prehistoric Chalcidice is now being linked up with the other fields of Aegean archaeology. The Megali Toumba was occupied during the Neolithic Age by a people of Thracian and Dimini relationship. Early Helladic invaders probably destroyed the settlement and abandoned the hill. As Early Helladic strata have been found on virgin soil at Molivopyrgo, the port of Olynthus, and above a neolithic deposit at Hagios Mamas half a mile to the south, Dr Mylonas suggests that the Early Helladic name was given to the village at Hagios Mamas and transferred to the Megali Toumba by later Greek settlers. So Olynthus does not altogether belie its name ; and another volume will show when the first Greek settlers arrived, and, if the above suggestion is correct, how long a period of time elapsed during which the name of the neighbouring mound survived in memory. As yet no Iron Age remains have been reported from the neighbourhood ; Hagios Mamas was abandoned at the close of the Late Macedonian period, and Molivopyrgo still earlier.

There are remains of three settlements, each of which was destroyed by fire ; but no radical change of culture occurred in the 1.50 metres of neolithic deposit. Dr Mylonas gives a detailed account of each section of the finds, paying particular attention to a potter's kiln, the ten figurines, and the sixty-five celts, which are all illustrated, while two admirable charts give the required details. Monochrome red and black pottery characterizes the site throughout, a polished black being the commonest of the fine wares. Incised and painted sherds were found in a small percentage in the two upper strata ; group I, matt black on red clay or lustrous black on a deep red slip, is related to the Dimini $\beta 3\alpha$. Group II, white on black polished, of which one sherd alone survived, recalled the first stratum at Vardino, Thessalian i.γ.i. and a Thracian ware. These painted sherds seem in general agreement with Heurtley's finds at Hagios Mamas, but in different proportion. (B.S.A. report, 1927–28). A few red-slipped sherds were found from virgin soil upwards ; but no satisfactory conclusion is reached about them, for Dr Mylonas rejects, and later claims, their similarity to Thessalian I (pp. 34, 50).

The book is unfortunately marred by confusion of thought and vagueness of expression. For example the words 'Thessalian' and 'Neolithic' are used where precise nomenclature is important. We are left to wonder whether there were one or more examples of the incurved rim typical of Early Helladic bowls, whose development is surprisingly traced through the three settlements (pp. 23, 32, 84). And Dr Mylonas struggles in vain to deny racial affinity with the early Danubians, as attested by the black carboniferous ware. He implies that connexion with the Danube means intrusion from the Danube ; but Childe (*Danube in Prehistory*, pp. 34, 63) has convincingly reversed the direction and attributed Vinca I and Danubian I to Aegean colonizers.

The illustrations are profuse ; but while six sherds are illustrated twice, there is no map or topographical photograph such as Rey gives (B.C.H., 1917–19, p. 168, fig. 135). The sherd which is described as 'worthy of any prince's table' is illustrated upside down (pl. I, 3). Exact measurements are always given in the text, but neither plans nor illustrations have scales. 'Childe' as a foot-note refers to *The Dawn of European Civilization*. The word 'parallel' on p. 41 and the word 'straight' on p. 48 are not borne out by the illustrations. For 'graffite' on pp. 49, 50 read 'graphite'. G. A. D. TAIT.

L'OLOGENÈSE HUMAINE (OLOGÉNISME). *By* GEORGE MONTANDON. *Paris: Librairie Félix Alcan*, 1928. *pp.* 478 *and* 8 *plates.* 125 *francs.*

The author, a French geographer and anthropologist, is favourably known for his study of the Ainu. In this work he develops a somewhat novel theory of racial differentiation and discusses in some detail racial classification. The theory of ologenism is based upon Wegener's hypothesis of the origin of existing continents by fission from a primeval land mass, and upon the speculation of the Italian, Daniel Rosa, as to the production by animal species of paired daughter species. According to Wegener the last continental rupture was that which resulted in the separation of North America from Europe and occurred during the Pleistocene period. The other fissions preceded the evolution of higher primates.

Rosa's idea is that when a species reaches maturity it gives birth to new twin species, one of which is precocious and the other retarded in its development. Each of these in its turn has twins, but the backward species not only develops more slowly, but also reaches a higher evolutionary stage. Sometimes the precocious twin is sterile.

Montandon combines these theories and postulates, if I understand him correctly, a separate evolution of paired human races in each of the continents (with the possible exception of the Americas). In a paper subsequent to the book, the author summons in support of his ologenetic views the apocryphal anthropoid ape alleged to have been discovered in Venezuela sometime between 1917 and 1920. To a sceptical observer the one published photograph of this 'anthropoid' looks like a spider monkey sitting on a cracker box, and the tale of his discovery and subsequent loss is more amusing than convincing. As long ago as 1914 I heard rumours of a large tailless ape in this part of South America. In particular, one of my students, a native of Ecuador, persistently and sincerely averred that the existence of such a primate in the tropical forests of that region was generally recognized in his country. I offer this corroborative evidence for whatever it may be worth.

However that may be, I doubt that the theory of ologenism will receive much approbation from students of primate evolution.

Dr Montandon discusses in some detail anthropometric measurements and methods and criteria of race. He is thoroughly conversant with all of these. He finds, apparently, nothing of any value in the methods of Pearson and the Biometric School. Some of his criticisms are perhaps just, but it seems to me that he goes too far. He empties out the baby with the bath-water.

E. A. HOOTON.

FARMS AND FANES OF ANCIENT NORWAY: the place-names of a country discussed in their bearings on social and religious history. *By* MAGNUS OLSEN. English translation, *Oslo: H. Aschehoug and Co.*; *London: Williams and Norgate*, 1928. *pp.* 349 *with sketch map and illustrations.* 8*s.* 6*d.*

In ANTIQUITY for June 1928 Professor Magnus Olsen's researches were mentioned by the reviewer of a previous volume in this series by Dr A. W. Brögger. Dr Haakon Shetelig's *Préhistoire de la Norvège* (1926) was a notable forerunner in this valuable group of books, in which eminent Scandinavians are summing up the results of field-explorations carried on through the past century. And as Norse is not generally read, they are wise in providing translations and making their work accessible to all. This volume is very readably translated by Th. Gleditsch, and its novelty in scope is sure to stimulate any reader to whom the question has occurred—When we have collected and interpreted our own place-names, what next?

Professor Magnus Olsen's method is to classify and correlate his finds, digging down through the strata of successive ages like the explorer of a Roman site, until he is able to give an account of the social history of the country from the evidences, checked by archaeology, philology and other information that can be brought to bear upon the subject. In such a new adventure, criticism of details must be of less value at present than an attempt to sketch the main argument of the book.

He begins by distinguishing the place-names given by inhabitants from those given by travelling strangers. For example, along the coast is a string of islands of which the names are foreign ; they must have been landing-sites in prehistoric times when Norway was the 'North-way' for trading-adventure to the Arctic, possibly when the country inland was hardly settled by a farming population. Then, taking the farm-names, he works back from the historical period, tracing the comparative ages of words used as elements of compound place-names. Such a word as *ruð* (ridding or reclaimed land) he finds applied to new farms formed by thralls and others of an inferior class, beginning in the eleventh century. Earlier than that are the large classes of names containing *stadir* (stead), *setr* (seat ; not the same as *sæter*, shieling) and *land* (with more of the meaning of a shieling, or ground lying out from the original main farmstead). These are mainly of the Viking age though some 'steads' can be followed back to the fifth or sixth century A.D., and they imply secondary settlements founded by cadets or retainers of the ancient families whose ancestral homes are still known by the very ancient word *heim*. Of these, some are shown by philology to date as far back as the fourth and fifth centuries, and a few contain relics of the earlier Iron Age. Another word, *vin* (meadow) can be referred by similar arguments to the third and fourth centuries A.D., and must indicate the homes of important families in what is called the Roman period of Norse antiquities. But even these are secondary settlements, implying still earlier centres which are found with uncompounded names ; because the earliest stay-at-home population called their house simply 'the house', or by some natural feature which distinguished the site. And alongside of these simple and archaic names are not a few which cannot be explained by even the oldest Norse vocabulary ; they must have been given in some ancient Germanic language by travellers or immigrants such as Shetelig has shown to have come into the country about A.D. 300. Geographical considerations also indicate the priority of such sites, and when Bronze Age remains are found upon them, the probability of their survival from very early times is argued, supporting the view advocated by Shetelig that the population of Norway has been continuous from the beginning.

Turning now to what our author calls in his title the 'Fanes', we note how many parishes have been named from heathen sites on very ancient farms where the godi or chief had a *hof* (temple). This word appears to have come into Norway about the seventh century, giving a limit to the date of these place-names. The *hörgr* (altar of stones) usually preceded the temple ; it was the primitive centre of the worship of Frey and other gods of fertility, served by priestesses, in the older form of Norse religion. And names in *haugr* (howe) connect with archaic cults of the dead, in the north of Norway ; in some cases the finds at such howes take us back to the fifth or fourth century A.D.

This rough sketch of the contents gives a hint of the highly curious and fascinating study which is here opened out. To most it will break fresh ground ; some of these excursions may seem to advance almost too boldly into the mist, but the careful and documented reasoning of Professor Magnus Olsen ought to encourage the reader to make the adventure under such able guidance. W. G. COLLINGWOOD.

L'ART MUSULMAN. *By* HENRY MARTIN. *Paris*: *R. Ducher*, 1926. *pp.* 64, 14 *plates and* 29 *figures in the text.* 9 *francs unbound*, 15 *francs bound.*

This is the fourteenth volume of a popular history of art under the title *La Grammaire des Styles*. As it is printed in very large type and as about half the total number of 64 pages are devoted to illustrations, the letterpress consists of barely 10,000 words; but in that brief space the author contrives to give a very fair description of the chief characteristics of Muslim art in all countries. He agrees with M. Saladin in dividing the vast extent of his subject into five local schools: Syrian and Egyptian, Moorish, Persian, Turkish and Indian. The Moorish school, as is only fitting in a French book, receives the fullest treatment of all, for its territory included Algeria, Tunisia and Morocco as well as Spain and Sicily; and the author places it in the front rank of Muslim art, though he confesses that in constructional skill the Egyptian and Persian architects were superior. He gives us the interesting information that 'Mogreb', the name given by French writers to the group of countries where Moorish buildings are found, is an Arab word meaning 'the land of the setting sun'. The illustrations from Fez and Marrakesh in this chapter are well chosen, and form a pleasant relief from the inevitable but somewhat hackneyed examples from the Alhambra, Cairo and Constantinople, which form the bulk of the subjects. Most of the illustrations, both photographs and line-drawings, are excellent; but the elevation of part of Ibn-Tulun's mosque at Cairo (plate v) is very poor. The author's careful description of the beautiful mosque of Qayt-Bay at Cairo is misleading, for there are two buildings of that name: one within the city and one in the Eastern cemetery outside, commonly called 'the Tombs of the Caliphs'. The author's description with the accompanying illustration (plate IX) refer to the mosque of Qayt-Bay 'intra muros', but in fact it is the example *extra muros* that is described and illustrated. It is significant that almost every illustration in this little history of Muslim art should depict architectural subjects, or ornament applied to buildings. The only exception is the fine Persian carpet (p. 12). The easel picture was practically unknown in the Muslim world, as was all figure-sculpture, for its Founder forbade the representation of natural forms, and only in later Persian and Indian miniatures (mentioned on p. 54) do we find this ban disregarded to any extent. The nature of Saracenic ornament, with its elaborate geometrical basis, is admirably outlined here, and the author points out that a severely conventionalized type of acanthus foliage is used freely in such ornament, especially in 'Mogreb', where it is often combined with pine-cones, palmettes and shells. The book includes an argument in favour of the term 'Muslim' (or *musulman* in French) rather than 'Arab', 'Saracenic' or 'Moorish', as applied to this art.

MARTIN S. BRIGGS.

CEYLON JOURNAL OF SCIENCE, Section G, Archaeology, Ethnology, etc. *Edited by* A. M. HOCART. Vol I, parts 1–4, *pp.* 210, *with* 93 *plates.* 1924–28. Vol. II, part 1, *pp.* 71, *with* 36 *plates.* 1928. *Ceylon*: *The Archaeological Commissioner*; *London*: *Dulau and Co. Ltd.* *Rupees* 3.50 per part.

In (or about) 246 B.C., in the reign of the great Asoka, a branch of the sacred 'Bo-tree' of Bodh-Gaya was planted in Ceylon to be a life index of the little colony from Gangetic India which had settled in the island a few generations earlier. The tree still lives, and the Sinhalese are still a nation. Their national vitality, however, is in no sense the result of isolation. Ceylon lies on the great highway of commerce between Europe and the Far East, the route controlled in turn by Rome and China, by Islam and

Christendom. But it was from the mainland of India, especially from the Tamil nations of the South, that alien aggression was most persistent. The national chronicle, with its 2300 years of continuous history, is an amazing record of a great tradition which has held its own against armed invasion and peaceful penetration, usurpations domestic and foreign, partitions and religious revolutions. Pressed back from the coasts, the Sinhalese contested every foot of ground, and time and again retaliated. From their highland strongholds they defied the Portuguese, the Dutch, and the British; and though in 1815 they ceased to be a sovereign state, they are still true to their national manners, and, in its purest surviving form, to the Buddhism that Asoka preached.

In spite of its unique value to the student of human culture, Sinhalese history is not as well known as it should be. The evidence is abundant, but much of it still lies scattered in fever-ridden jungles or in administration reports and other ephemeral publications almost as inaccessible, and little has till recently been done to piece them together into intelligible pictures.

A new epoch in Sinhalese studies began in 1924 with the appearance of Mr H. W. Codrington's *Coins and Currency of Ceylon*, vol. I of the *Memoirs of the Archaeological Survey*, and the *Ceylon Journal of Science*.

The *Journal*, 'established by the Ceylon Government for the publication of scientific and other researches', consists of seven sections, each published separately under its own editor. Of these, section G is devoted to Archaeology, Ethnology, etc.

Mr Hocart is an ethnologist of ripe experience. He rightly refuses to regard Sinhalese culture as an insular phenomenon. In three important articles on the origin of the Stupa, India and the Pacific, and the Indo-European Kinship System, he links Ceylon with Britain and Fiji. With the same wide outlook he discusses money, thrones, coronation rites, the four quarters, and the guest, while Mr S. Paranavitane, in a masterly survey of Mahayanism in Ceylon, elucidates a most important period of North Indian influence in Sinhalese Buddhism, and also supplements, with tabular lists of inscriptions and concise notes on their salient points, the scholarly but more leisurely issues of *Epigraphia Zeylanica*.

But the chief interest of the *Journal* centres in Mr Hocart's search for criteria by which the archaeological evidence can be dated. In this the chronicles give less help than one would expect; even monuments which can be identified have too often been repaired or rebuilt beyond recognition. Tradition seems sometimes positively perverse. Coin finds are few and fitful, and are not necessarily contemporary. Inscriptions are rarer than in India; they are less informative and appear only at spasmodic intervals. Pottery in Ceylon is crude and of little evidential value. The system elaborated by Mr H. Parker of dating bricks by their size fails when tested. But by a patient examination of the monuments themselves, their plans, mouldings, balustrades and sculptures, their 'guardstones' and 'moonstones', the method and materials of their construction, the types of bonding and stone-dressing, the use of brick, limestone and gneiss, of mortise and tenon, of mud, lime and plaster, Mr Hocart has successfully differentiated the crucial features of three main periods of Sinhalese culture, up to about A.D. 1200, viz., I Archaic, II Classical, III Archaistic. For later periods the ordering of the evidence is well in hand.

Mr Hocart is to be congratulated on the firm foundation he has laid for future research. But his articles in the *Journal* are, after all, but chips from his workshop. The finished products are the *Memoirs*. Of these, vol. I, as already noted, appeared in 1924. It embodies the results of work at Anuradhapura by Mr Ayrton, Mr Hocart's

predecessor, whose promising career was cut short by death in 1914. Vol. II, on some typical monuments at Polonnaruva, came out in 1926. Vol. III, on the Temple of the Tooth, was completed long ago, but unfortunately 'no decision has been arrived at about printing it' (Annual Report for 1927–8)! In quality these *Memoirs* are, in every way, a credit to the Ceylon Government and their officers. To withhold them from publication would be a grave disservice not only to the world of science, but also to the valiant nation whose history they commemorate. F. J. RICHARDS.

EXCAVATIONS IN THE TRUNDLE, GOODWOOD, 1928. *By* E. CECIL CURWEN, M.B., F.S.A.; (reprinted from *Sussex Archaeological Collections*, vol. LXX). *pp.* 52 *and* 16 *plates*. *Cambridge*: *Heffer*.

Air-photography has already done much to lighten the task of the excavator in providing him with a knowledge which he would otherwise have to acquire by protracted labour, even when, as in the case of the Trundle, the method of 'ramming' on chalk sites can furnish a preliminary insight into the nature of the ground to be explored. But neither the one nor the other relieves the excavator from constant vigilance if he desires to obtain the full value of his discoveries. That this condition has been fulfilled by Dr Curwen and his helpers, this report amply testifies.

Within the ramparts of an earthwork of the Iron Age, and in part overlain by them, were discovered typical interrupted trenches of a Neolithic encampment, which, so far as the excavations went, showed no traces of disturbance by later Bronze Age settlers. The later fortifications seem to cover a period from late Hallstatt to La Tène II, possibly a late survival of that phase.

The exploration, partial though it was,* is a valuable contribution to a growing volume of knowledge about the hilltop sites in Britain. Most of them are too large to allow hopes of thorough exploration at the present time, but a series of similar excavations would throw a flood of light on the occupation of Britain in prehistoric times, would sweep away a lot of baseless conjecture, and in so doing provide a solid basis for future workers. A *sine qua non* is a careful report like that on the Trundle, and, if it can be illustrated with drawings which are equally successful in rendering the quality and texture of the finds, notably here of the Neolithic pottery, so much the better. E. T. LEEDS.

IRELAND'S PLACE IN PREHISTORIC AND EARLY HISTORIC EUROPE. A Translation of an Essay by the late WALTHER BREMER. *Dublin*: *Hodges, Figgis and Co.* 1928.

Walther Bremer had been barely a year Keeper of Irish Antiquities in the National Museum of Ireland when, in November 1926, he died prematurely in the 40th year of his age. He had had experience both as a teacher of archaeology and as a museum administrator, and this essay was originally written by him in German as a contribution to a memorial of the 75th anniversary of the Mainz Museum, of which in former days he had been an assistant. A translation of the essay has now been published jointly by the Royal Irish Academy and the Royal Society of Antiquaries of Ireland as a tribute to the memory of the author.

As the essay of 38 pages covers the whole period, from Neolithic times to the coming of the Anglo-Normans, the treatment is necessarily very much condensed, but

* It has been resumed this year.—ED.

nevertheless it shows a masterly grasp of the subject. The author stresses the view that Ireland derived her early culture from Northern Spain. He instances the hand-axe or coarse chopper from Island Magee, the hemispherical vessels of pottery with coarse decoration, and the strange markings on the Clonfinlough stone, as all pointing to a close connexion with the Iberian Peninsula.

'With the discovery of native copper in Ireland there begins', he says, 'the first great efflorescence of Ireland, during which the Green Isle was the centre of industry in northwestern Europe'. This is a bold claim. It covers the first period of the Bronze Age, which according to him, is to be dated about 2500–1900 B.C. It was partly due to the alluvial gold of the Wicklow Hills. In proof he adduces the distribution, as worked out by Coffey and Mr O. G. S. Crawford, of lunulae, sun-discs, and (later) 'twisted gold rings of the Tara type', commonly called torques. He notes however that it was to her native copper, rather than to her native gold, that Ireland owed her industrial pre-eminence. 'There can hardly be any doubt', he says, 'that the knowledge of metal-working has made its way to the western Baltic from Ireland through Scotland'. This is indicated by the finds in that region of bronze halberds and ornamented axes of recognized Irish type. But in the latter part of the second period 'there fell upon this country a long period of slackness and stagnation', as shown by the cessation of imports from Ireland in the region beyond the North Sea on the east and beyond the Channel on the south. We find, on the contrary, the influence of the Scandinavian–Germanic North on Ireland, as for instance in the case of the spiral whose course has been traced by Coffey. In Ireland the spiral has been found concentrated in the region north of the Boyne. To this Bremer and others have found an exception in the Hollywood Stone with its perfected labyrinth pattern, suggesting at first sight the appearance of a spiral with a cross in the centre. This was found near the Wicklow Mountains, but the present writer has given some reasons* for thinking that this particular design reached Ireland in the early Christian period—at the time of that 'second efflorescence of Ireland', recognized by our author and indeed by all writers of Irish history, and due to monastic influence under the inspiration of the new religion. GODDARD H. ORPEN.

REPORT ON THE EXCAVATIONS OF UISNEACH. *By* R. A. S. MACALISTER *and* R. LLOYD PRAEGER. *Proceedings of the Royal Irish Academy*, vol. XXXVIII (C), *pp.* 69–127. *Dublin*: *Hodges, Figgis and Co.* 1928.

The Hill of Usnagh (*Uisneach*) in Westmeath is one of the most famous sites appearing in the early dawn of Irish history. On it still stands a great rock, called by Keating 'Ael na Mireann', (The Rock of the Divisions) because, as he says, the four provinces met there until Tuathal Teachtmhar in the 2nd century A.D. took a portion of each to form the kingdom of Meath. A similar story is told by Giraldus Cambrensis, who says the stone is called the 'Umbilicus Hiberniae'. This rock appears to have been known also as 'Petra Coithrigi', or Patrick's Rock, about which two slightly variant stories are told in Tirechan's memoirs and in the Tripartite Life. There is, moreover some ground for thinking that St. Patrick founded a church near by, for an early list of bishoprics, quoted by Camden, (ed. Gibson 1695, p. 975), is headed by the 'Bishopric of Meath or Elnamirand'. But whatever doubt may be cast on these early traditions, it is clear that this hill was one of the four great assembly places of Meath: the others

* *Journal Royal Society of Antiquaries of Ireland*, 1923, LIII, pp. 177–189.

being Tlachtgha, Taillte and Teamhair (Tara). The assembly at Uisneach took place on Bealtaine, (May-day), when fires were lit in honour of the god Beil, and cattle were driven between them to preserve them from disease—a custom which in some places has only recently died out. Surely here we might expect careful excavation to yield some interesting results.

In reading this report, we cannot fail to recognize the great care with which the authors have described the Hill of Usnagh—both the external appearance of the numerous monuments thereon, and the complex results of their excavation of the ' Hill-top Enclosure ', the principal monument on the hill. Here, four periods are distinguished. To the first is assigned a circular ditch, 156 feet in circumference, and several post-holes, all afterwards filled up. These last, though irregularly placed, are supposed to be traces of a wooden sanctuary, somewhat similar to that whose former existence was disclosed by aerial photography near Stonehenge. In the filling of this circular ditch was found a pin of a penannular brooch, with simple La Tène ornament, incised and inlaid with silver. This would necessarily belong to one of the later periods, and with other objects described as late La Tène, would suit very well the period of about a century from the year 150 A.D., when Tuathal Teachtmhar and his successors are believed to have resided at Usnagh, until Cormac Mac Airt transferred the seat of the monarchy to Tara. A building, in a sort of later annexe on the west side of the main enclosure, is regarded by the authors as the ' palace of King Tuathal '. If so, we must humble all notions of the magnificence of these early Irish kings, for above ground there is evidence of only one chamber, 17 ft. by 15 ft., with rough walls of stones and mud, while underneath is a narrow souterrain with a maximum height of 5 ft. To an earlier period must be assigned a bed of ashes, charred bones and burnt clay, 10 ft. across by 6 in. deep, suggestive of a sanctuary where a fire was kept up and burnt sacrifice offered. This, and other marks of fires, seem to bear out the traditions, preserved in different forms in the Dindseanchus and Keating, of great fires associated with the hill. The authors give a list of 120 objects, mostly of iron, found within the enclosure. The almost complete absence of human remains shows that the enclosure was not a cemetery. It is harder to account for the entire absence of pottery, and the authors are driven to suppose a taboo. Careful plans, photographs and drawings help the reader to visualize the evidence disclosed, and to appreciate the complicated problems involved.

We are glad to hear that further excavations have been undertaken, with important results, on another site on the hill. GODDARD H. ORPEN.

EXCAVATIONS IN BALUCHISTAN 1925, SAMPUR MOUND, MASTUNG AND SOHR DAMB, NĀL. *By* H. HARGREAVES. Memoirs of the Archaeological Survey of India, no. 35. *Calcutta*, 1929. *pp.* IV, 89, *with* 24 *plates*. 16*s*. 3*d*.

Mr Hargreaves expresses some disappointment that his work has not provided definite links between the civilizations of Mesopotamia and the Indus valley. We cannot share that disappointment. He has given us an exemplary publication of a thorough piece of work, in a region which is still archaeologically a blank. This is exactly what we need, and it is to be hoped that the work will be continued in the same manner. For surely it is not to be expected that a few weeks excavation in a country of the size of Baluchistan would yield at once a section through precisely those centuries of its civilization, which we are able to interpret in the light of discoveries in adjacent regions.

Sampur Mound, Mastung, 33 miles south of Quetta, seems to have been a small fort,

built on an artificial foundation on the top of a hillock. Lower down, in the sides of the mound, large vessels were found at various levels, but no traces of floors or walls, though occasionally a mud brick could be recognized. Perhaps weathering and pressure of earth in the mound has obliterated the traces of constructions. Perhaps, also, these jars, merely buried in the ground, contained, as Mr Hargreaves suggests, the stores of grain of some semi-nomadic population, which could not carry all its provisions with it. A fine silver cup, over 4 inches high, of a shape also found in the Indo–Parthian strata at Taxila, and some Indo–Scythian coins, indicate the age of these remains. 'The site must have been occupied for some considerable time before and after the Christian era, and have been abandoned long before the Muhammedan invasion, and never afterwards occupied '.

At Sohr Damb, Nāl, trenches revealed a necropolis consisting of oblong burial vaults, with mud brick walls on stone foundations, orientated to the cardinal points. Each contained more than one interment. The exceedingly careful observations of Mr Hargreaves (see especially pp. 23, 24), give us complete certainty that we meet here ' fractional burials ', that ' the bones were buried as bones and not as part of a body clothed with flesh '. Occasionally complete interments were found, but mostly of children ; only once of an adult who was buried lying on the left side, head towards the east, face southward, knees slightly bent. As children are often interred without the usual funerary rites being observed, it remains to be cleared up whether the adult represents an exceptional case or whether two modes of interment were in use side by side.

Amongst the objects found the pottery takes the first place. It is beautifully decorated, but the colours (blue, green, yellow, red, black), of which one can get an impression in an earlier publication of Sir John Marshall (*Archaeological Survey of India*, 1904–5, pl. 33), can all easily be rubbed off. We would not agree with Mr Hargreaves that this indicates that the vessels were intended for funerary use only ; some binding material, such as albumen, may have decayed. The question whether this pottery can be brought in connexion with any of the wares known in the Near East can only be answered with great reserve ; but I am inclined to be a little more positive than Mr Hargreaves and to suggest that it is not unlikely that the wares belong to the Highland Culture which finds its best exponent in Susa I, but is now known to have extended all through Persia, and dominated, at an early date, Mesopotamia (*Antiquaries Journal*, October 1929, 345 ff). The differences are very great, but so is the geographical distance between Susa and Nāl. The main motives on either side differ, but their ' syntax ', the way they are put together on the vase, is sometimes not dissimilar : in both cases bowls are mostly decorated on the inside, sharp-shouldered pots on the shoulder only. There is, in and near Susa, and in Nāl, as Mr Hargreaves has noticed, some inclination to stress with a step-design the diagonal of an oblong panel (pl. XVIII, 8, 16). The trio of shapes from Susa I : beaker or cup, open bowl, and small closed pot, prevails also in Nāl, where the small pots have no lug-ears, and show sometimes the same shape as those of Susa I, sometimes however they are strangely canister-like. The Nāl shapes are certainly more advanced than those of Susa I, but not more than those of the Mesopotamian descendants of the Highland Culture ; these however developed on lines of their own, diverging, as the Nāl pottery did in another direction, from a common origin, which is perhaps best reflected in the pottery of Susa I. A few isolated resemblances in the decoration of the pots from Nāl and from Susa should be noted (cf. pl. XVIII, 12, with *Mém. Déleg. en Perse* XIII, pl. XXXI, 9 ; XLI, 5 ; and pl. XVIII, 10 with *Mém.* XIII, fig. 135). The fact that these resemblances affect shapes, and also details

of decoration as well as principles of composition, makes the assumption of some distant relationship a rather attractive hypothesis. On the other hand Mr Hargreaves has pointed out that one decorative design, and the shape of a stone weight, find parallels in the Indus valley.

It is indeed time to turn to the other finds from the necropolis. Some parallels might probably be found among the new finds in Mesopotamia, for the beads from Sohr Damb, but this involves a far-reaching research on a subject hardly touched as yet. The one steatite seal, showing a vulture on a serpent, would hardly fit in a collection of Near Eastern seal-stones. But the implements of the site are remarkable. Flints and flakes of chert or obsidian, so numerous on the western sites and also in the Indus valley, are conspicuously absent. This is the stranger as some copper tools are imitated in stone, and thus suggest that the metal age was still young when the necropolis was made. This apparent rarity of metal, may however, be a sign of poverty only. The shapes of the tools, axes, adzes, daggers, a fragment of a saw, are not very primitive, but such have been used in the A-cemetery at Kish as well as at Mycenae. But tools are untrustworthy as dating evidence, on the whole. (Incidently the only blemish of this excellent work is the absence of an analysis of the implements, to show that they were copper and not bronze, and to bring them in line with the analysis of the Committee of the British Association, which inquires into the origin of copperworking). I should date the graves, almost as a guess, in the second half of the third millennium. It may be mentioned that lead and silver were also smelted.

The second half of the volume is devoted to a very thorough and interesting study of the (dolichocephalic) skull and some other bones from the necropolis, by Lt. Col. R. B. Seymour Sewell and Dr B. S. Guha. In the discussion the latest discoveries of human remains at Kish and Ur are taken fully into account. We may here only mention that Dr Hall's theory of an Indian origin of the Sumerians is refuted, because according to Mr L. H. Dudley Buxton the true Sumerians would be the brachycephalic, and not the dolichocephalic, people found at Kish. This, however, need not be assumed, and the extant sculptures are, if early, too clumsy to be of documentary value; and, if late, figure people of a mixed descent: *de Sarrec* pictures brachycephals and dolichocephals on one plate of sculptures of Gudea's time. The brachycephalic strain in the Mesopotamian population may, as Professor Christian has suggested, be the Armenoid Subaraean stock from the North. But if prehistoric Indians, Sumerians, 'Semites', and Egyptians (to say nothing of the long-barrow people of England) all belong to the 'brown' or Mediterranean race (and on this point Sir Arthur Keith and Professor Elliot Smith agree), we cannot expect much help from physical anthropology in our study of early civilization.

H. FRANKFORT.

LAS EXCAVACIONES DEL SERVICIO DE INVESTIGACION EN 'COVA DEL PARPALLO'. *By* I. BALLESTER TORMO. *Cultura Valenciana* IV (1929), no. 3. *pp.* 82.

The lately-established Servicio de Investigación of Valencia can already boast a respectable list of excavations carried out under its auspices, but Sr. I. Ballester Tormo believes that the exploration of the Cova del Parpallo (Gandía) is, as yet, the most interesting and the most important of its undertakings; therefore in a short preliminary notice he tells us something of the treasures lately brought to light here by this fortunate band of Valencian archaeologists. In deposits that were well-nigh undisturbed Sr.

Tormo and his friends have found some 10,000 flint implements (1,000 of Madeleine types, and others showing affinities to the Asturian pick), a quantity of bone tools and harpoons, a huge stack of animal bones, and, most precious of all, a long series of engravings on stone. There are, indeed, a full hundred of these last, about sixty of them bear animal engravings while the rest show geometrical designs that await interpretation. The cave has also yielded a number of stone slabs daubed with red paint, and though some of these are supposed to have been palettes, others of them bear intentional designs.

This is the first Madeleine cave of the East Spanish coast and a detailed account of the rich and remarkable series of finds made therein will be awaited with impatience. In the meantime English archaeologists, on hearing of this notable discovery, will want to offer to Sr. Tormo and his colleagues their felicitations. T. D. KENDRICK.

THE ASSYRIANS AND THEIR NEIGHBOURS. *By* REV. W. A. WIGRAM. *London: G. Bell and Sons*, 1929. *pp.* 242, *with* 14 *illustrations, bibliography, index and map.* 15*s.*

In the eight century A.D.—the days of Harun-ar-Rashid—twenty-five metropolitan archbishops owed allegiance to Timothy, Patriarch of the Nestorian branch of the Syriac-speaking Church, and members of his communion were to be found as far west as Cyprus, as far south as Sumatra, as far east as Tibet and China. The earliest Arab scholars were making the acquaintance of Plato and Aristotle at the Nestorian Colleges at Nisibis and Seleucia, and the Commander of the Faithful himself did not disdain to seek and to follow Timothy's advice in a delicate domestic situation (p. 81). These were the great days of the Nestorian Church, which—because it occupies the native land of Sargon and Sennacherib and consists (as he believes) of direct descendants of the peasants who fought in their armies—Dr Wigram prefers to call 'The Church of the Assyrians'. The Assyrian Christians shared in the general havoc caused by repeated Turkish and Mongol invasions of Mesopotamia from A.D. 1000 onwards; but they remained in the land of their fathers until, at the end of the 14th century, the Mosul-Erbil district where they lived was depopulated by Timur, and those who escaped were forced to seek sanctuary amongst Moslem Kurds in the Hakkiari mountains. There their descendants remained until the Great War, still governed by a Patriarch, half archbishop, half chieftain, still preserving their ancient faith, their ancient customs, and their ancient language.

In 1915 they solemnly declared war on Turkey, but in spite of brave resistance to Turkish attacks, they were dislodged from their mountain villages at the end of the year, and in 1918 the forty or fifty thousand of them who survived were living in a refugee camp at Baqubah near Baghdad. Today they remain as one of the minor problems which face the king of Iraq. The League of Nations has refused their request to be allowed to return to their old homes under the League's protection; and they are left in Iraq, mountain folk who hate the plains, 'not numerous enough to be a political danger, though it is certain, unfortunately, that they can be a political nuisance' (p. 238).

Dr Wigram tells the story of the Assyrian Church from the 2nd century, and tells it most attractively. We cannot check his statements, for he gives no detailed references to original sources; but, in all that concerns the Assyrians of the present day, we can accept his own authority, for he has spent many years amongst them as head of 'the Archbishop of Canterbury's Mission to Assyrian Christians', and has an intimate knowledge of their ways. His descriptions of them are very pleasant to read. It is

interesting to meet Christians who still occasionally offer an animal sacrifice (p. 190), a bishop who leads a successful infantry attack (p. 238) and another who breaks his pastoral staff in the exercise of fatherly discipline (p. 203); to read an authentic letter of invitation which ends with the words 'if you do (visit me) I shall be proud to receive you; if you do not, my honour will make it needful for me to shoot you, so I hope that you will come' (p. 205); to be reminded of a justification of the practice of 'Reservation' and a use of the Reserved Sacrament which were never even mentioned during recent discussions of the Book of Common Prayer (p. 196).

Equally interesting is Dr Wigram's account of the past history of the Assyrians, of the nations and individuals with whom they came in contact, and of the origins—almost without exception political rather than religious—of the 'unhappy divisions' of Syriac-speaking Christianity. Here the scholar may wish that the author had given in detail the authority for his statements, but the ordinary reader will be content to enjoy a wonderful pageant of romantic figures:—Addai and Mari, saints and evangelists; Bardaisan and Mani, heretics; Harun-ar-Rashid at variance with Zubeydeh his wife; Tartar converts to Christianity confronted with the problem how to celebrate the Eucharist when bread and wine were unknown to them; Saladin and Prester John; Jenghis Khan and his grandson Kuyuk who sent a famous message to the Pope; Archdeacon Soma, a high-born Chinese Christian, received at the English court and administering the Blessed Sacrament to Edward I of England; Nestorian Christians in Malabar outwitting their Portuguese Roman Catholic conquerors by turning Monophysite. These and many other equally picturesque figures pass before us in Dr Wigram's pages.

It would be surprising if, in a popular narrative which covers so long a period in so short a space, one did not find one or two statements which need correction or qualification. It is misleading, for example, to say that 'the Syriac language is the direct derivative from Hebrew and Assyrian' (p. 27); that 'one of the Gospels . . . is known to have had a Syriac original' (*ibid*); that a Scythian invasion of Palestine in 600 B.C. (*sic*, p. 93) left its impress on the words of the prophet Zephaniah (who spoke, if the Bible can be trusted, between 639 and 608 B.C.); to suggest that the modern Assyrians used 'a form of the same . . . script as their predecessors' (i.e., as the context shows, the ancient Assyrians, p. 184); to imply that the sacred books of Zoroastrianism still exist in their original form (p. 33); that we have means of knowing whether 'the scribe Ezra wrote sometimes in Syriac, sometimes in Hebrew' (p. 180); that the days of Darius and Xerxes (or even of the whole Achaemenid dynasty) extended from 600 to 300 B.C. (p. 11); that a thousand years have elapsed since the Seljuk Turks invaded Anatolia (p. 99). These, however, are small and relatively unimportant blemishes which scarcely diminish the value of an unusually interesting book, for which all who care for the past history of the Christian Church or for the present condition of Mesopotamia owe Dr Wigram their thanks.

F. S. MARSH.